The Natural Diabetes Cure

Curing Blood Sugar Disorders
Without Drugs

Roger Mason

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Curing blood sugar disorders without drugs

The most researched and comprehensive and complete book written on curing blood sugar disorders naturally with diet, supplements, hormones, and exercise.

Roger Mason

The Natural Diabetes Cure

by Roger Mason

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Contents

Chapter 1: About Diabetes	8-11
Chapter 2: Diagnosis	12-15
Chapter 3: Whole Grains: The Staff of Life	16-19
Chapter 4: Fats and Oils	20-23
Chapter 5: Diet, Diet, Diet	24-32
Chapter 6: Effective Supplements	34-41
Chapter 7: Temporary Supplements	42-45
Chapter 8: Lipoic Acid	46-49
Chapter 9: We All Need Minerals	50-57
Chapter 10: Hormones	58-65
Chapter 11: Hormone Testing	66-69
Chapter 12: Heart Disease and Cholesterol	70-75
Chapter 13: Obesity Is Basic	76-79
Chapter 14: You Must Exercise	80-83
Other Books by Square 1	84

Seven Steps to Natural Health

With these seven steps you can cure "incurable" illnesses like cancer, diabetes, heart disease, and others naturally without drugs, surgery, or chemotherapy. These are seven vital steps to take if you want optimum health and long life. Do your best to do all of them. The only step to add would be prayer or meditation.

- An American macrobiotic whole grain based diet is central to everything. Diet cures disease; everything else is secondary.
- Proven supplements are powerful when you're eating right.
 There are only about twenty scientifically proven supplements for those over forty, and eight for those under forty.
- Natural hormone balance is the third step. The fourteen basic hormones are listed on the previous page. You can do this inexpensively without a doctor.
- Exercise is vital, even if it is just a half-hour of walking a day. Whether it is aerobic or resistance you need to exercise regularly.
- Fasting is the most powerful healing method known to man. Just fast from dinner to dinner on water one day a week. Join our monthly Young Again two day fast. This is the last weekend of every month.
- No prescription drugs, except temporary antibiotics or pain medication during an emergency. (There are rare exceptions such as insulin for type 1 diabetics who have no operant pancreas.)
- The last step is to limit or end any bad habits such as alcohol, coffee, recreational drugs, or desserts. You don't have to be a saint, but you do need to be sincere.

About This Book

All blood sugar conditions should be treated the same way with diet and lifestyle- diet, proven supplements, exercise, natural hormones, avoiding prescription drugs, weekly fasting (if possible), and avoiding bad habits.

As long as you have an intact pancreas, you can cure yourself. Those whose pancreas has irreversibly atrophied, or been surgically removed, can still dramatically improve their health, and reduce their insulin requirements.

Diabetes and other blood sugar disorders are caused by what we eat and the way the live. You can cure yourself by making healthier food choices and living better. You can heal yourself in less than a year if you are sincere.

Diabetes is the fastest growing epidemic in the Western world. One in three American children will grow up and needlessly develop diabetes. 24% of American adults are insulin resistant and 45% of adults over the age of 60 are insulin resistant. In the last three decades diabetes and other blood sugar problems have become epidemics in all of the developed countries of the world. It is estimated that about 18 million Americans have diabetes, 16 million are pre-diabetic, and a whopping 60 million (one in five) have metabolic syndrome. America leads the world in blood sugar dysmetabolism for a very simple reason; we have the greatest affluence, as well as the worst diets and lifestyles. We are overfed and undernourished.

Changing your diet and lifestyle will both prevent and cure blood sugar disorders. The medical profession cannot help you; you must help yourself. Treating the symptoms with toxic drugs is the road to ruin. You have to be your own doctor, and your own saviour. You must be willing to eat better foods, get regular exercise, and change your lifestyle. Please read my book *Zen Macrobiotics for Americans*. *The Natural Diabetes Cure* is the most researched, effective, documented, comprehensive, and complete book on diabetes and blood sugar problems available. This research goes back over 30 years. Everything is backed up by countless published international clinical studies.

Chapter 1: About Diabetes

The fastest growing disease in the world! The metabolic syndrome, or pre-diabetes, is the fastest rising epidemic on the planet. This condition is characterized by:

OBESITY
INSULIN RESISTANCE
DYSLIPIDEMIA (blood fats)
HYPERTENSION
HIGH INSULIN

Obesity may be responsible for 75% of the problem. Insulin resistance most often goes undiagnosed. Hypertension is another epidemic, and 75% of such people have diabetes. High blood cholesterol, and especially triglycerides, are characteristic. High blood insulin levels also go undiagnosed. Almost one in four American adults suffer from metabolic syndrome, and will soon be diagnosed with diabetes. Half of all diabetes goes undiagnosed! According to the Center for Disease Control (CDC) in Atlanta, one in three children born today in the United States will develop type 2 diabetes. One in three American children will be diabetic! Age is one of the biggest factors, since one in four Americans over the age of 65 is diabetic. Stress is also an important factor, and most Westerners are under a good deal of self imposed stress. No other country in the world will approach these statistics. Blacks, Latins, Asians, and Amerindians suffer disproportionately. American Pima Indians, for example, have an almost 50% rate of outright diabetes. Mexican Pima Indians, on the other hand, follow their traditional diet and lifestyle. They have a very low rate of just a few percent. One fourth of adult Navajo Indians are diabetic, according to CDC statistics. Asian adults in America generally have almost a 40% rate of diabetes, yet this is rare in the rural areas of Asia. Many Asian cities have now largely adopted the Western high-fat, high sugar, refined foods diet, and their diabetes rates are soaring. Latin adults in America generally have a 15% diabetes rate, but not in their native countries. In Papua New Guinea- possibly the least civilized country in the world- diabetes is basically unknown. Black American adults now have a high overall 15% diabetes rate. Yet, this is rare in Africa, where they eat their traditional diet. Caucasian American adults have the lowest overall rate.

We are only going to discuss blood sugar metabolism in general, rather than the metabolic syndrome, type 1, type 2, gestational, hypoglycemia, insulin resistance, and other conditions. These are all simply facets of the same basic problem. Diabetes is the most serious and deadly condition. Currently this is the fifth leading cause of death in the U.S., and will soon be the fourth leading cause. Almost twenty million Americans now have actual diabetes, which means about one in every fifteen. In addition, there are probably about six million more, mostly poor people, who have diabetes, and simply haven't been medically diagnosed. A million more are newly diagnosed every year. These are mostly the impoverished and elderly, who can't afford the medical care they need. All in all, this would mean about one in twelve Americans are diabetic, with the rates rising every year! This is the fastest growing disease of all worldwide plain and simple. India and China are also coping with growing epidemics. In the 1990s the diabetes rate in America increased a full one third. Almost \$150 billion a year is spent directly and indirectly worldwide on diabetes treatment. This money is basically wasted on toxic, harmful prescription drugs such as Metformin, Januvia, Onglyza, Amaryl, Avandia, Glucotrol, and Actos. None of these drug therapies are effective; actually they worsen your health.

The situation gets worse when you consider metabolic syndrome or Syndrome X. The CDC recently studied 8,814 normal men and women. They found that 22% of them exhibited at least three of the six factors of metabolic syndrome. People over 60, with three of the factors, had a 44% rate, or double the average. This means almost *half of Americans over the age of 60 are prediabetic*. This condition is called "pre-diabetes", since such people can plan on becoming diabetic within ten years or less.

Again, the basic indications are obesity (especially abdominal), insulin resistance, elevated blood sugar, high cholesterol and triglycerides, and hypertension. There are three main types of diabetes. Type 1 (insulin dependent) is due to the inability of the beta cells in the pancreas to produce insulin. Only 5% to 10% of people suffer from type 1. Surprisingly, Caucasians are more susceptible to this form. This usually happens in childhood or adolescence. These patients have to inject insulin, since they can't produce it naturally. If the pancreas has been removed, or is atrophied, the condition cannot be cured. Quality of life can be improved immensely, and insulin requirements can be reduced dramatically, by following the advice in this book. Pancreas transplants just don't work despite the claims. Transplanting a pancreas from a cadaver to a type 1 diabetic requires dangerous anti-rejection drugs, and causes countless problems. Transplants of just the pancreatic beta cells also promise much more than is delivered. Within twenty years science may be able to successfully perform this procedure, but that will merely be allopathic. It will not deal with the cause!

Type 2 diabetics (non-insulin dependent) produce insulin, but the cells simply don't react well to it anymore. This type is very curable, usually in a year or less). Here, the pancreas not only produces insulin, but usually overproduces it, since the effectiveness is so reduced. The third type is called "gestational diabetes", since it only affects pregnant women. For some reason, pregnant women are more susceptible to diabetes than anyone else.

The best way to understand the dysfunction of insulin and blood sugar is the theory of *oxidative stress*. Here free radicals run rampant through the body, and use up our antioxidants— glutathione, SOD (superoxide dismutase), beta carotene, vitamin E, vitamin C, CoQ10, melatonin, lipoic acid, and others. This is why it is so important to, first of all, lower the oxidative stress with better diet and exercise. Secondly, we need to take all the known antioxidant supplements to neutralize the excess free radicals. These supplements are discussed in detail in chapters six and seven. The high rates of alcohol and nicotine use add to oxidative

stress. Coffee (or any form of caffeine) raises blood sugar, and has other very serious health effects. The scientists of the world are in basic agreement that free radical oxidative stress is central to blood sugar conditions.

About a half million Americans die every year from diabetes. If you are diabetic, you have about three times the rate of strokes, about three times the rate of heart attacks, and greatly increased rates of atherosclerosis (clogged arteries). Remember that heart disease is the number one cause of death, and the biggest killer by far. Blindness and vision problems are called "diabetic retinopathy", and are epidemic for people with impaired blood sugar metabolism. Amputation of limbs, due to poor circulation, is common. Various cancers, gastrointestinal infections, osteoporosis, erectile dysfunction, poorly healing wounds, kidney infections and failure, poor sleep, are all part and parcel here. Psychology is affected including depression, senility, Alzheimers, impaired memory, and other problems. Any blood sugar dysfunction means poor quality of life and early death. The pancreas deteriorates, nerve damage of various kinds can be expected, liver disease is routine, and skin infections (especially Staphylococcus) are common. Your liver is central here since it produces the blood sugar from the food you eat. Your kidneys are the second most important organs. The list of side effects is almost endless, since the total health of the body is destroyed.

If you have type 1 diabetes, pancreas transplants and beta cell (the insulin producing pancreatic cells) transplants just don't work at all. You can dramtically reduce your insulin requirements, reduce your medication, and improve your health immensely, with the information in this book. Even if your pancreas has been removed, or atrophied beyond repair, you can still live a good life with minimal insulin. Anyone with type 2 diabetes can cure themselves within a year, and live a normal, healthy life.

Chapter 2: Diagnosis

What are the diagnostic indications of blood sugar dysmetabolism? Look for any combination of obesity, hypertension, insulin resistance, low HDL cholesterol, high LDL cholesterol, high triglycerides, hypertension, high homocysteine, elevated uric acid, increased C-reactive protein, hypercoagulability of the blood, fasting blood glucose over 85 mg/dL (European mmol/L is 4.7), HbA1c over 4.7%, low white blood cell count, high creatinine, and proteinuria (albumin in the urine). Age is critical here. The older you are, the more blood sugar problems you can expect to have. Diabetes rates go up dramatically after the age of 50. Genetics is obviously important, and any family history of such problems increases your chances. Obesity is one of the cornerstone factors, and an entire chapter is devoted to this. Race is very important. You are far more at risk if you are of African, Asian, Amerindian, or Latin origin. Caucasians have the lowest rates (except type 1). Smokers get far more diabetes than others, as do people who drink substantial amounts of alcohol, or use caffeine.

What specific diagnostic tests can you get? When you get your standard, basic blood analysis profile you'll test glucose, uric acid, white blood cell count, total cholesterol, HDL (high density or "good"), LDL (low density or "bad"), and triglycerides. Total cholesterol should be about 150 ideally, and very definitely well under 200. Triglycerides are very crucial here, and should be under 100. Uric acid should be under 5 mg/dl for men and under 4 mg/dl for women. The white blood cell count should be in normal range. CRP should be less than 1 mg/l. Proteinuria (albumin) and creatinine tests will also reveal kidney health. The liver is very important here for a lot of reasons. Get both SGOT and SGPT tests. Surprisingly, you do not need to get your insulin tested. You should also have your homocysteine (Hcy) tested and look for 10 mmol or less. This is a also good predictor of coronary heart disease (CHD) in general. Currently we do not have practical, inexpensive tests to determine total oxidative stress or general free

radical levels. It is costly and unnecessary to test the basic status of antioxidants such as SOD, glutathione, vitamin C, beta carotene, and vitamin E. The anti-oxidant supplements you should take are discussed in great detail in *Chapter 6: Supplements*.

Blood pressure is basic here, and you should look for a reading of 120/80 or better. Please read my book *Lower Blood Pressure Without Drugs* to see how to normalize your blood pressure naturally. By following the advice in this book you can have healthy blood pressure levels within 90 days. Inexpensive home electronic monitors are widely available in drugstores.

The most accurate test you can get is a glucose tolerance test (GTT). This is more predictive than testing your insulin level per se, as it shows the sensitivity of your insulin. If your blood sugar level is over 85 mg/dl you need to do this. A GTT is the "gold standard", accurate, well known, inexpensive, but very under-utilized. It is just not commonly done due to lack of knowledge in the medical profession. Simply get a one hour, one blood draw test (you should already know your fasting blood glucose level so you won't need a draw before you drink the glucose solution). You go to the doctor fasting and drink a 50 g cup of glucose solution and wait one hour. Your blood glucose will then be tested to determine the effectiveness of your insulin response. Use 20 points below the accepted medical figure for your cutoff point. If the medical figure is 140, then you want 120. This tells you how your cells actually respond to insulin, and not merely your blood sugar level. This is the gold standard.

A HbA1c test is very accurate. This tests long term gly-cation (sugar molecules attached to hemoglobin), and the result should be 4.7% (equals 85 mg/dL blood sugar) or less, and not the 5.6% (100 mg/dL!) the doctors will tell you. 4.7% or less. There are exotic tests you can get such as leptin, malondialdehyde, thrombomodulin, tumor necrosis factor-alpha (TNF), adoponectin, plasminogen, fibrinogen, and others. These are simply not practical or necessary; plus they can be expensive and hard to obtain. It is

very difficult to test the amount of oxidative stress you suffer from, or your antioxidant status in general. There just isn't any reason to spend the time and money on these tests. Your attention needs to be on *curing yourself and changing your diet and lifestyle*, rather than getting exotic diagnostic tests you don't need.

Generally people can simply get their total cholesterol (TC) and triglycerides (TG) tested. Here you can also test your high density ("good") HDL and your low density ("bad") LDL levels. Your TC should ideally be about 150 mg/dl. The media and medical profession will tell you that a TC 200 level or less is good, but that's just not the case at all. Even if you have genetically high cholesterol you can still keep your level well under 200 with diet, supplements, hormones, and exercise. Please read my book Lower Cholesterol Without Drugs. The TG level is the most important blood lipid marker of all for blood sugar problems. Even vegans and ethical vegetarians can (and usually do) have high levels due to an inordinate intake of sweets. Your TG means more than your TC, LDL, or HDL. You should keep your triglyceride level below 100. You can do this with the same means as for total cholesterol. People with blood sugar problems usually have low HDL and high LDL levels. People with low cholestserol (e.g. about150) will naturally have lower HDL levels. You can raise your HDL and lower your LDL the same way with diet and lifestyle.

Fasting blood plasma glucose is part of your basic routine blood analysis. *Again, your level should be at 85 mg/dl or less* (European 4.7 mmol/L). Levels of 100 and higher are clearly prediabetic. You need to have low blood sugar, and the usual accepted level of 100 and less just isn't good enough. Doctors will tell you that any reading under 100 is "normal", but this just isn't true. This was proven at the Riks-hospitalet Hospital, in Norway, with a 22 year follow-up study of 1,998 healthy men. Those with glucose levels of 85 or less lived the longest, and had the least cardiovascular disease - the biggest killer of people in the world by far. Get an inexpensive (\$10) blood sugar meter to monitor your blood sugar if it is over 85.

C-reactive protein (CRP) is a marker for inflammation, and a very important test for CHD conditions. Keep this under 1.0. The best study on this came from the Quebec Heart Institute. CRP correlates with obesity, blood glucose impairment, insulin resistance, hypertension, triglycerides, and uric acid. It has been found the CRP also accurately predicts blood sugar disorders. CRP is positively associated with obesity, impaired glucose function, the metabolic syndrome generally, and outright type 2 diabetes in otherwise healthy people. Everyone over the age of 40 should annually get a CRP test with their regular yearly checkup and blood analysis. Even children and young people can benefit from a CRP test.

Uric acid is part of a standard blood analysis. The research is overwhelming that high uric acid is clearly associated with type 2 diabetes and the metabolic syndrome in general. Surprisingly, low uric acid can be associated with type 1 diabetes. This is not due to better diets in people with type 1, but rather excessive excretion of uric acid in this condition. High uric acid levels are associated with obesity, high triglycerides, high systolic blood pressure, and a high total cholesterol to low HDL ratio. High uric acid comes from eating the animal proteins in meat and other animal products (not from purines). The widespread purine theory is just not correct. Dairy foods have almost no purines, but raise uric acid levels. The less meat, poultry, eggs, and dairy products you eat the better. High uric acid is basically found only in wealthy developed countries where animal foods are staples.

There should be very low levels of albumin (protein) in your urine. Excess albumin is called "microalbuminurea". You can use urine test strips from the drug store, instead of a urine analysis from a physician. This is one very good indicator of kidney health. Serum creatinine is another. *Eating a low protein diet is vital*. Eat no more than 10% seafood if you like. Americans eat twice the protein they need, which causes many health problems. Again, don't get carried away with diagnostic tests. Put your time and energy into curing yourself.

Chapter 3: Whole Grains: The Staff of Life

Whole grains are literally "the staff of life", and have been the staple food of almost all civilizations throughout history. Since man started agriculture about 10,000 years ago, whole grains have been the principal food of most all people in the world. Rice and wheat are the most consumed foods on earth. This emancipated us from being mere primitive hunters and gatherers. The "Paleolithic" people on this diet had very short life spans. The cultivation of whole grains parallels the very evolution of mankind. Our grains are refined, and we eat white rice, white bread, white pasta and white flour. Americans eat a mere 1% whole grains! Whole grains should be the very basis of your diet.

The real cure for blood sugar dysfunction of any kind is making better food choices, and eating whole natural foods. *Diet is everything!* Read Chapter 5: Diet, Diet, Diet. Eating fat, sugars, refined foods, and just plain too much food, is the basic cause of blood sugar problems. Eating whole, natural, high-fiber, low-fat, low-sugar foods is the cure. Supplements, hormones, and exercise are secondary to what you eat. You can cure diabetes and other conditions with diet alone, but that is difficult, takes longer, and is simply not necessary. Please read my book *Zen Macrobiotics for Americans* to learn more about making the best food choices, proven supplements, hormone balance, and sensible fasting.

Whole grains such as wheat, rice, barley, corn, rye, oats, buckwheat, spelt, and millet should be the basis of your diet. This is very easy to do by eating such foods as whole grain pasta, whole grain breads, brown rice, oatmeal, steamed barley, whole grain breakfast cereals, polenta, and unrefined grain products of all kinds. There are so many human published clinical trials on these we can't begin to mention them all. We'll stick to some of the largest.

At the Famous Harvard School of Nutrition (PLoS

Medicine v 4, 2007) 161,737 women (aged 37 t0 65) in the classic Nurses' Health Study were followed. Their dietary patterns were studied. The researchers concluded: "Whole grain intake is inversely associated with risk of type 2 diabetes. Findings from prospective cohort studies consistently support increasing whole grain consumption for the prevention of type 2 diabetes." You can just not debate the results from this many people studied over years. The more whole grains you eat, the less chance of getting diabetes or any other blood sugar disorder. More from Harvard (Annals of Internal Medicine v 136, 2002) was done with 42,504 men over a 12 year period. This is 466,508 person years! A stunning review with 24 references was done at Harvard (American Journal of Clinical Nutrition v 77, 2003) came to the very same basic conclusions.

At the University of Minnesota (*Proceedings of the Nutrition Society* v. 62, 2003) "Epidemiological Support For the Protection of Whole Grains Against Diabetes" was published. This impressive review was based on 160,000 men and women. "There is accumulating evidence to support the hypothesis that wholegrain consumption is associated with a reduced risk of incident type 2 diabetes. It may also improve glucose control in diabetic individuals". They went on further to say, "Observations in non-diabetic individuals support an inverse relationship between whole-grain consumption and fasting insulin levels". The more whole grains you eat, the more effective your insulin is metabolized in other words. "Glucose control improved with diets rich in whole grain in feeding studies of subjects with type 2 diabetes". You cannot argue with the results of 160,000 people.

In a collective study between the USDA, Harvard, Tufts, and other institutions (*American Journal of Clinical Nutrition* v. 76, 2002) one of the famous Framingham series of studies was used to study whole grain intake for the prevention of type 2 diabetes. "After adjustment for potential confounding factors, whole grain intake was inversely associated with body mass index, waist-to-hip ratio, total cholesterol, LDL cholesterol, and fasting

insulin". They said further, "The inverse association between whole grain intake and fasting insulin was most striking among overweight participants". Their conclusion was, "Increased intake of whole grains may reduce disease risk by means of favorable effects on metabolic risk factors". The series of Framingham studies are the most pretigious ever done. In the very same journal, from Simmons College, a similar study was done." "Whole Grain Intake and Risk of Type 2 Diabetes". 51,529 men were followed for 12 years as part of the Health Professionals Study. This study is one of the most famous and best ever done. Their dietary patterns were examined in detail. The men who ate the most whole grain foods had the least diabetes. Their conclusion was clear". A diet high in whole grains is associated with a reduced risk of type 2 diabetes. Efforts should be made to replace refined-grain with whole grain foods". Other similar published studies were done at Harvard with the very same results.

At the University of Minnesota this same phenomenon was found with 36,000 women for six years (*American Journal of Clinical Nutrition v. 71, 2000*). This was a first rate study complete with 48 references. The more whole grains they ate, the less diabetes they suffered from. "These data support a protective role for whole grains, cereal fiber, and dietary magnesium in the development of diabetes in older women". They found that, "Total grain, whole grain, total dietary fiber, and dietary magnesium intakes showed strong inverse correlations with incidence of diabetes". The more whole grains the less diabetes.

Nathan Pritikin was a real natural health pioneer back in the 1980s. He published two articles (*Diabetes Care* v. 5, 1982 and v. 6, 1983) on diabetes, diet and exercise. *Diabetics on oral medication got off the drugs in just 26 days!*, by simply eating a whole grain based natural diet, and walking everyday. *In less than a month they were drug free!* This is nothing less than amazing. The supplements we have today were not available at that time, nor were natural hormones like melatonin and DHEA. Eating better food, and taking a daily walk, got most all of them off medication

in less than a month. Imagine the results Nathan could get today by adding proven supplements and natural hormones!

Beans and legumes are very closely related to whole grains, Beans are high in protein, minerals, lignans, and sterols, but low in fat and calories. A four ounce serving of pinto beans, for example, has a mere 117 calories and 1% fat calories. Be sure to include beans and legumes in your daily fare. When you learn to cook beans and use them in stews, soup, dips, and spreads you'll come to enjoy them very much. At Sun-Yatsen University in China (*Ying Xue-bao* v. 20, 1998) diabetics were fed legumes. This lowered their glucose levels as well as their C-peptide levels (a basic marker for heart disease). Tofu, by the way, is a heavily refined product, lacking in nutrition, and only to be used occasionally.

Fiber is one of the important factors here. Whole grains and beans (legumes) have more soluble and insoluble fiber than any other food groups. *Meat, poultry, eggs, and dairy products are completely lacking in fiber*. There are many studies showing the importance of fiber, not only for blood sugar conditions, but for all major diseases. The best way to get fiber is by eating whole grains and beans every day. There are many studies to show that merely adding fiber to our diet improves glucose and insulin metabolism dramatically. Fiber supplements are obviously not the answer at all. Eating whole foods gives you plenty of fiber, especially whole grains, beans, vegetables, and fruits. Americans are generally very fiber-deficient from eating refined foods and too many fiber-less animal products.

Chapter 4: Fats and Oils

Americans eat about 42% of their calories as saturated, artery clogging, animal fats You only need about 8% unsaturated vegetable oils, so this is more than 500% of what you need. These saturated fats are the wrong kind of fats. This is a major reason we lead the world in heart disease, various cancers, diabetes, and other major illnesses. We are addicted to animal fats. While various sugars are the main cause of diabetic-type conditions, saturated fats (and omega-6 from vegetable oils) are another major factor. Fats and sugars work together synergistically to cause high insulin, high blood sugar, and increased insulin resistance. The combination is devastating.

How do we know for a fact that high fat diets cause diabetes and other blood sugar conditions? Epidemiological studies have consistently shown that countries like China, Viet Nam, Thailand, Korea, and Japan have far less diabetes rates. Migration studies have shown that when these people move to the U.S., and adopt the typical Western diet, they get as much, and usually *more*, blood sugar conditions than other Americans. Studies of what people eat also prove the more fats they consume the more diabetes they get. When diabetics are given low-fat diets, they improve dramatically. Lastly, studies of the plasma free fatty acids (FFAs) in our blood give irrefutable proof that fats, especially saturated fats, cause blood sugar dysfunction.

We must discuss obesity in relation to fat intake. It is not food that makes you fat; it is fat that makes you fat. You simply cannot be overweight, or stay overweight, if you take dairy products, meat, poultry, and eggs out of your life. Overweight people always eat more fat, and have much higher levels of free fatty acids in their blood. These fatty acids are mostly all those from animal foods, and not those from vegetable sources.

It is not just the saturated fats that cause problems, but also

excess vegetable oils (due to the omega-6 content). We eat far too many omega-6 fatty acids, and far too few omega-3s. This is why flax oil is recommended as a supplement. Flax is the best source of omega-3 fatty acids known. Yes, the Mediterranean diet is better than the Western European and American diets, but is not the answer at all. Excessive intake of olive oil is just as harmful as any other vegetable oil. Vegetable oils are merely less harmful than animal fats. The point here is to eat a diet of less than 20% total fat- a 30% fat diet is not "low." There is also the problem of hydrogenated and partially hydrogenated "trans fatty acids". These are made by forcing hydrogen gas into vegetable oil, under extreme pressure, with exotic catalysts. This "saturates" the molecule, and gives the oil longer shelf life. Hydrogenated fats are the worst possible choice, and you should avoid them. Read your labels. The published research, in just the last few years, on the effect of dietary fats is far too volumous to even attempt to cover. We certainly can mention a few of the largest reviews to prove this very clearly. The best evidence comes from an analysis of the free fatty acids (FFAs) in our plasma.

At the University of Richmond (*Metabolism* v 51, 2002) The effect of dietary fats on diabetes was reviewed. The Role of Plasma Fatty Acid Composition in Patients with Type 2 Diabetes. This was a lengthy review with a full 55 references. 14 different fatty acids were analyzed from patients and controls. Overall plasma saturated fatty acids (from animal fats) were 43% higher in diabetics. Specifically, saturated fatty acids like palmitic, oleic, and stearic were much higher in the diabetic patients. "Total saturated fatty acid (SFA) concentrations (350 v 231 umol/L) were significantly increased in the diabetic subjects." Please note, this is 350 umol versus only 231 umol. Vegetable oils did not play a part, but there was a deficiency of omega-3 fatty acids, and an excess of omega-6. As usual, it was also found diabetics had dramatically higher triglycerides, higher cholesterol, lower HDL, as well as higher insulin and blood sugar. A detailed analysis of FFAs in human blood makes an inarguable case against animal fats in your diet causing blood sugar disorders.

This same phenomenon was demonstrated at the University of Minnesota (*American Journal of Clinical Nutrition* v. 78, 2003). 2909 adults had the fatty acids in their blood measured. This is a better means to determine fat intake than mere dietary analysis. "Our findings suggest that the dietary fat profile, particularly that of saturated fat, may contribute to the etiology of diabetes". They further said, "...diabetes incidence was significantly and positively associated with the proportion of total saturated fatty acids in plasma". They specifically found high levels of saturated (animal) fatty acids such as palmitic, palmitoleic, and stearic in their blood. Again, we find animal products in the diet as the cause of diabetes.

The Women's Health Study (*Diabetes Care* v. 27, 2004) has been one of the largest and longest ongoing studies of female health, and involved more than 37,000 women over the age of 45. The amount of red meat they consumed was compared to their incidence of diabetes. "Our data indicate that higher consumption of total red meat, especially processed meats, may increase risk of developing type 2 diabetes in women". They also found that consumption of cholesterol and animal protein was also significantly associated with high diabetes rates. These results were carefully adjusted to exclude other possible factors like dietary fiber. Always remember that cholesterol is only found in animal foods, and not any plant foods.

We can further prove the relation of fat intake to blood sugar dysmetabolism by studies where people change from high-fat to low-fat diets. This is especially true with regard to vegetable oils instead of animal fats. At the University of Otago in New Zealand (*British Journal of Nutrition* v. 83 Supp, 2000) a heavily referenced review of the literature in this area was published. "Lifestyle changes can reduce the progression of impaired glucose tolerance in type 2 diabetes. Insulin sensitivity is enhanced by a range of diet-related changes, including reduction of visceral adiposity, and a reduction in saturated fatty acids". *Saturated fat intake causes diabetes- plain and simple*.

Another powerful review with 44 references from the University of Uppsala in Sweden, in the same journal (v 83, 2000), found high levels of palmitic and palmitoleic fatty acids (from animal foods) in the blood serum of diabetics. FFAs were clearly related to both diabetes and obesity as well. "A high level of dietary fat is associated with impaired insulin sensitivity and risk of diabetes." Similar studies show significant relationships between serum lipid fatty acid composition- which mirrors the type and amount of the fatty acids in the diet, and insulin sensitivity. You are just not going to have high levels of palmitic, palmoleic and stearic acids in your blood when you eat whole grains, vegetables, fruits, and seafood as your basic sustenance, as these are basically from saturated animal fats.

These results were verified by the Centre de Recherche in France (*Diabete & Metabolisme* v 21, 1995) in a review with 89 refer-ences. FFA levels were clearly and directly associated with diabetes and other blood sugar problems. Also from Temple University in Arizona (*Diabetes* v 46, 1997) in a review with 74 references. FFA levels are elevated in obesity as well. At the University of Napoli in Italy a 12 page review with 131 references was done (*European Journal of Lipid Science* v 103, 2001). They found plasma FFAs to be strongly correlated with high cholesterol, high blood pressure, high triglycerides, obesity, insulin resistance, coronary heart disease, and outright diabetes. That's pretty clear!

The literature is replete with studies such as these, and the scientific community is in good agreement that high-fat diets are one of the major causes of the growing epidemic of type 2 diabetes and other blood sugar problems. We won't quote more. Remember that "low-fat" means 20% or less, and mostly all unsaturated vegetable oils. This is very easy to do by simply taking animal products out of your diet, and eating moderate (10%) amounts of seafood.

Chapter 5: Diet, Diet, Diet

It has been repeated over and over that *diet*, *lifestyle*, *and exercise* are the way to cure blood sugar conditions of all kinds. Americans eat 42% fat calories (nearly all saturated animal fats), This is five time the fat they need. They also eat twice the protein, half the fiber, and twice the calories they need- plus 160 pounds of various sugars they don't need at all. *We are overfed and under-nourished*. This chapter will cover the basic points in my book *Zen Macrobiotics for Americans*. Please read this book to really understand how to make the best food choices. Traditional Japanese macrobiotics has a very limited selection of foods, and does not use supplements, natural hormones, rigorous exercise, or even fasting. The word "macrobiotics", simply means an overall (macro) view of life (bios). You will be eating the common foods you grew up with. There is really nothing exotic about it.

One of the basic causes of blood sugar dysmetabolism is a diet high in saturated animal fats. This is documented in the previous chapter. Americans eat over 500% of the fats they need, and nearly all of these are saturated animal fats, instead of vegetable oils. You do not have to be a vegetarian to cure diabetes and similar illnesses, as you can eat 10% seafood. Ideally you would eat no beef, pork, lamb, poultry, eggs, or dairy foods. Technically, diabetics could eat, say, three 4 ounce portions of lean meat every week and still cure themselves, but this would slow down your progress. The best way to cure yourself is to stop eating red meat, poultry, eggs, and all dairy products. This includes low-fat and lactose reduced dairy products.

Milk and milk products are the most allergic foods known. They contain lactose (milk sugar), and cancer promoting casein. All adults of all races are lactose intolerant, since they no longer produce the enzyme lactase. Without lactase you simply cannot digest lactose. Everyone over the age of three years old is allergic to dairy products. Fact. Nature provided cow milk for calves, and

goat milk for baby goats. Lactose-reduced milk is just not the answer here at all, nor are lactase tablets like Lactaid®. Dairy cheese is low in lactose, but is extremely high in saturated animal fat, casein, and cholesterol. It is a very poor food choice. You can use soy, rice, almond, or oat milks instead of dairy milk. Very good meltable non-dairy cheeses are available at any grocery store. You can even buy soy cream cheese. Dairy yogurt has twice the amount of milk sugar, since powdered milk is added to thicken it. Soy yogurt and soy ice cream is readily available, but contain quite a bit of sugar.

The studies proving dairy products cause diabetes are numerous. At the Health Protection Branch in Canada (American Journal of Clinical Nutrition v. 51, 1995) the doctors said, "There is a significant positive correlation between consumption of milk protein and incidence of IDDM in data from various countries". They also found that babies who were naturally breast fed were protected from type 1 diabetes. At the A2 Corporation in New Zealand (Medical Hypotheses v. 56, 2001) the researchers clearly found milk proteins related to diabetes, heart disease, and outright mortality. "Milk casein consumption also correlates strongly with type 1 diabetes incidence". At the University of Helsinki in Finland (Experimental and Clinical Endocrinology & Diabetes v. 105, 1997), the research showed clearly that milk consumption both for mothers and children is a major cause of type 1 diabetes. Again, at the University of Helsinki (Diabetologia v. 41, 1998) they found the children most allergic to dairy products (based on blood antibodies) had the highest rates of diabetes. At the University of Tampere in Finland (Diabetes v. 49, 2000) they said, "In conclusion, our results provide support for the hypothesis that high consumption of cow's milk during childhood can be diabetogenic". At NIZO Research in the Netherlands (Nahrung v. 43, 1999) the same results were found. At the School of Medicine in Auckland. New Zealand (Diabetologica v. 42, 1999) it was clear that consumption of dairy products were strongly correlated with type 1 diabetes. The research is clear on this: take dairy products completely out of your life. Milk is not good food.

Beans are an excellent food, and are very similar to whole grains in their nutritional profile. There are many delicious varieties of beans available, especially in ethnic grocery stores. Beans, bean soups, and bean dips should be a central part of your daily fare. Get a good cookbook, and learn how to make more gourmet bean dishes. If you have problems with gas or bloating, this is not due to the beans, but rather to your weakened digestive system. Take Beano®, or a generic version of alpha-galactosidase, temporarily until your digestive system is stronger.

Fish and seafood can be eaten by people who do not want to be vegetarians. If you look in your mouth, you will see we have canine teeth. Humans can eat about one-tenth animal food, and the best choice is seafood. A few people are allergic to fish and seafood, however, and will not be able to eat them. Just limit seafood to about 10% of your diet. If you want to be a vegetarian or vegan, just don't eat seafood. There are no other animal products in the American macrobiotic diet.

We eat twice the protein we need. This causes many health problems, including obesity ,kidney, and liver disease. Many studies prove a high protein diet raises uric acid, and causes kidney and liver problems. Anytime you hear an author advocating a high protein diet, you will know they are clueless, ignorant, and uninformed. Whole grains, beans, and vegetables contain all the high quality protein and fiber you need. There are many studies to prove this. At Nara Medical University (Nara Igaku Zasshi v. 46, 1995) the doctors concluded, "A protein-limited diet was useful for prevention of diabetic nephropathy in patients with early-stage diabetic nephropathy". At the University of Vermont (American Journal of Physiology v. 27, 1996) they found the same results. Decreased protein intake was found to improve symptoms of type 1 diabetes. Limit your protein intake.

Most all green and yellow vegetables are a good choice, if you avoid nightshades, most tropical vegetables, and those high in oxalic acid. Japanese macrobiotics does not include many green and yellow vegetables, ironically. Actually, frozen vegetables are very nutritious; only the texture is harmed by the freezing process. Canned vegetables should be avoided. Avoid the nightshade family. This includes potatoes, tomatoes, peppers, and eggplants. Nightshades contain large amounts of toxic solanine. Macrobiotics is about the only diet system to warn against these nightshade vegetables. Also avoid vegetables high in oxalic acid, such as spinach, Swiss chard and others. Tropical vegetables like taro, etc. are meant for tropical peoples living in tropical climates. If you are of, say, African or Indian descent living in southern Florida or Arizona, you certainly can eat such tropical foods. If you are of European descent these foods were simply not meant for you.

People with blood sugar dysmetabolism of any kind cannot eat fruit juice, dried fruits, or sweeteners of any type until they are well. Avoid sugar substitutes like stevia. If your pancreas has atrophied, or been removed, this means you have to take them out of your diet permanently. You might think fruits provide important nutrients, and your diet will be incomplete without them. This is not the case at all, since fruits are basically made up of simple sugars, fiber, and water with very few vitamins and minerals. You cannot use sweeteners including honey, fructose, fruit juice, dried fruit, maple syrup, stevia, lo han, agave, molasses, rice syrup, corn syrup, or any others. Sugar is sugar is sugar, and honey is biologically no better than white sugar. Artificial sweeteners are the worst, and none of them are safe. The newest claim from sucralose to be, "made from sugar, tastes like sugar," is just not true. They don't tell you this is a manmade halogenated (chlorine molecules are added), synthetic, chemical, unnatural analog that isn't safe for human or animal use. Kick the sugar habit, and take the concept of "desserts" out of your life. You don't need desserts or sweets. The concept of desserts basically doesn't exist in Asia.

Scientists in Japan concluded, "The main reason of recent increase of diabetic patients is ascribed to increased sucrose intake" (*Chiba Igaku Zasshi* 72 (1996). Folks, Americans eat more than 160 pounds of various sugars and sweeteners every year-

which they don't need at all. The worst offender of all is high fructose corn syrup, since it is the cheapest to produce. At the Diabetes Research Centre in India (*Diabetologica* 44, 2001) it was shown the urban (not rural) Indians have an inordinate sugar intake. This causes epidemic diabetes rates, even though they are largely vegetarian, and eat a very low fat diet. Eating sweets will raise your triglyceride levels dramatically without eating fats.

It will be difficult for some people to simply give up all sweets and fruits. You can go through a transition period where you eat no cakes, cookies, sodas, pies, candy, and the other high sugar foods. For a few months you can eat 10% fresh (not dried or juiced) local fruit. No tropical fruits, as these are meant for tropical peoples in tropical lands- genetics and climate. You can also get a macrobiotic dessert cookbook and make whole grain desserts, lightly sweetened with whole fruit only. You'll come to enjoy these, and the subtle sweetness will be enough for you. Remember macrobiotic desserts are a temporary transition, and the sooner you take all fruit and sweeteners out of your diet, the faster you'll get well. Your body simply cannot handle simple sugars, regardless of how "natural" they are. Honey is still sugar. When you are fully cured, you can eat 10% local fresh (or frozen) fruit if you want.

You should enjoy a wide variety of natural soups. Eating soup will help you lose weight and stay slim. That's right, if you eat just two meals a day, and start with a delicious bowl of soup at each meal, you'll actually feel full and eat less food. Get some soup cookbooks, and learn to substitute healthier ingredients where meat, poultry, eggs, and dairy are called for. Traditional Japanese macrobiotics restricted you to only 5% soup daily, and almost always miso soup. There is just no reason for these kinds of unnecessary limitations. There is nothing magical or special about fermented soybeans. There are countless delicious soups you can make at home and freeze for future use.

You can eat a fresh, green salad every day, as long as you use a low fat, non-dairy dressing. Traditional Japanese macro-

biotics had a bias against fresh salads for some reason. In fact they had a bias against any raw foods at all basically. The best time to eat salads is in summer time, since they are rather yin. You can still enjoy fresh salads all year round. People who advocate a 100% raw food diet are irrationally neurotic, and cannot stay on these very long as their health deteriorates so badly.

What about real world, published studies that, 1) show the difference it cultural diets and rates of diabetes, and 2) diabetics who are given whole food diets? At Pantox Laboratories in CA (*Medical Hypotheses* v. 58, 2002) type 2 diabetics were given a natural vegan (no animal products) diet, along with daily walking. This study was backed up by a stunning 170 references. "The vegan diet/exercise strategy represents a safe, low-tech approach to managing diabetes that deserves far greater attention from medical researchers and practitioners". The patients got very quick, dramatic improvements and benefits including basic changes in their very blood parameters. They were fed local and tropical fruits, which should be omitted. You don't have to be a vegan to do this.

A cross-sectional study was done at the famous Cambridge University (*British Journal of Nutrition* v. 83, 2000) concluded, "Healthy Balanced Diets as One of the Main Components of Disease Prevention". 802 people were given GTTs (glucose tolerance tests). It was clear the ones who made better food choices had far less diabetes. The healthy people ate more vegetables, salads, fish, fruits, pasta, and rice. Those with poor GTT results ate more meat, dairy, eggs, and fried foods generally. In another study 25,698 Seventh Day Adventist vegetarians were examined. (*American Journal of Public Health* v. 75, 1985). Adventists are known to have far less diabetes, cancer, heart disease, and other conditions as a whole. The ones who did not eat eggs or dairy products were the healthiest. You can't argue with the results of almost twenty-six thousand real men and women.

Doctors at UCLA gave almost 5,000 male and female diabetics a diet and exercise program (*Diabetes Care* v. 17, 1994)

for just three weeks. Glucose levels fell dramatically. In just 21 days, and 71% of the ones taking oral medication discontinued their drugs! *That is over 7 in 10 in 21 days!* 39% of those on insulin stopped injecting themselves! *That is almost 4 in 10 getting off insulin in 21 days!* They simply ate better foods, and did some moderate exercise. Imagine what would happen if they did this for a whole year. These results are simply amazing!

We've got to mention the Pima Indians again. Half the Pima Indians still live in Mexico, and follow their ancient traditions of diet and lifestyle. The others live in the southwestern U.S., and have largely adopted the American lifestyle. Many studies have been done here because they are the same genetic stock. This one (*Diabetes Care* v. 24, 2001), from the University of Pittsburg, looked at their diabetes rates. The Mexican Pimas ate more corn, beans, squash, melons, and desert plants. They actually ate more calories (they do more physical labor), but had lower glucose levels and far less diabetes. The American Pimas have a 50% (!) diabetes rate, short lifespans, and many other diseases from eating the usual high-fat, high sugar, refined food diet. American Pimas given their native diet decrease their disease rates immediately. This also shows genetics is not the problem.

A fine review from the Helicon Foundation (*Medical Hypotheses* v. 54, 2000), with 84 references, was titled, "Toward a Wholly Nutritional Therapy for Type 2 Diabetes". The authors suggest preventing and treating type 2 diabetes with only diet, supplements, and exercise, rather than toxic, ineffective drugs. They also point out obesity, one of the most important causes of all, would be basically eradicated by such dietary means. We need more such progressive doctors using natural means to cure disease.

Another study from Harvard (*Annals of Internal Medicine* v. 136, 2002) was titled, "Dietary Patterns and Risk for Type 2 Diabetes in U.S. Men". Here over 42,000 men aged 40-75 were studied for diabetes, cancer, and heart disease for twelve years. It was clear the ones who ate more whole grains, vegetables, fresh

fruits, and fish lived the longest, and had the lowest illness rates. The ones who ate red meat, refined grains, dairy products, fried foods, and desserts had far higher disease rates, and much shorter lives. Forty-two thousand real people prove the point conclusively.

The diet books in print are generally terrible, and there are very few authors who have any idea of what they're talking about. If you go to a bookstore or library, you will see many books claiming to tell you how to cure diabetes. Nearly all of them are not only useless, but will actually make you worse. You can always tell if the books are spurious if the author suggests eating dairy products, eggs, meat, poultry, sweeteners of any kind (including honey, stevia, etc.), tropical foods (like bananas and citrus), or nightshade vegetables (like potatoes and tomatoes). It is not considered "good form" in this business to mention these pseudo-authorities by name, so they won't be named individually.

Susan Powter has written two good books, Stop the Insanity and Food, on eating well, staying slim, and calorie density. Susan practices what she preaches, and looks great at 61. Neal Barnard is a member of the Physicians Committee for Responsible Medicine (PCRM), and is a very sincere person. His books include *Turn Off* the Fat Genes, Live Longer, Live Better, Food for Life, and Eat Right, Live Longer. Gary Null has written Get Healthy Now, Vegetarian Handbook, and Seven Steps to Perfect Health. Terry Shintani is a very committed man who wrote *The Hawaii Diet*, and The Good Carbohydrate Revolution. Dean Ornish is also a member of the PCRM, and has written Eat More, Weigh Less and Program for Reversing Heart Disease. Robert Pritikin (Nathan Pritikin's son) has written a half dozen books on low-fat vegetarian eating. The old Nathan Pritikin books are still available in your public library. Michio Kushi is a prolific writer on traditional Japanese macrobiotics, as is George Ohsawa. You should read both of these authors, and then take the unnecessary, overly restrictive, limited, obsessive-compulsive Japanese trappings out of their writings. It seems that macrobiotic authors are the only ones to understand such basic truths as the toxicity of nightshade vegetables, and the

fact tropical foods aren't meant for temperate peoples. None of the aforementioned authors really understand proven supplements, natural hormone balance, and fasting to any degree, however.

The ridiculous "glycemic index" must be mentioned. This pseudo-scientific silliness is ridiculous on its face. To start with, their standard of reference is white bread! Sadly enough, this glycemic absurdity now appears in medical journals! The glycemic theory says that brown rice raises blood sugar as much as a sugared donut, and that a bowl of hearty oatmeal raises blood sugar as much as a Twinkie. If whole grains and beans raised blood sugar, the Asian countries would have the highest rates of diabetes in the world! The fact they have the lowest rates proves otherwise. You'll notice that the advocates of the glycemic index suggest eating red meat, poultry, eggs, and dairy products- while warning against whole grains and legumes generally. The logical conclusion here is a deadly ketogenic diet. Anyone promoting the glycemic index is obviously ignorant and completely misguided.

Calorie restriction is an important part of curing blood sugar conditions. Americans eat twice the calories they need. We eat three meals a day, when we only need two. Be sure to eat two meals a day instead of three. You only need to eat twice a day, and soon this will become perfectly normal for you. Breakfast is not, "the most important meal of the day". The less calories you eat the longer you live. Men can thrive on about 1,800 calories a day, and women on about 1,200 calories. Roy Walford is the only one who wrote extensively on this subject. Please read his The 120 Year Diet, and Maximum Lifespan. Eat as little as possible, and keep your caloric intake down by eating low fat foods. It isn't food that makes you fat; it is fat that makes you fat. You don't need to walk around hungry, nor can you. Willpower is an illusion. You can eat all you want, and still take in fewer calories by simply making better food choices. You can eat all you want, never be hungry, and still stay slim, if you just eat whole, natural foods. The answer is eating lower fat foods and not less food. Please take a good look at the calorie density chart in Chapter 13: Obesity to convince

yourself of this. You can literally eat all you want, if you just make better food choices. Americans eat twice the calories they need.

It would literally take 80 years to study humans for the total benefits of calorie restriction, but we have 1) shorter term human studies, and 2) full term animal studies. Calorie restriction is the most effective way to extend lifespan and quality of life. At Heinrich-Heine University in Germany a heavily referenced review was published (Weiner Klinische Wochen v. 106, 1994). Real people greatly improved their insulin sensitivity, and lost weight, by eating lower calorie foods. At the Franco-Czech Laboratory (Journal of Clinical Endocrinology & Metabolism v. 89, 2002) obese women improved their insulin resistance, and lost weight, by simply eating lower calorie foods. At Alexandra Hospital (International Journal of Obesity v. 27, 2003) obese diabetic men were given lower calorie foods for 12 weeks. They lost weight, lost body fat, lowered their cholesterol, and improved glycemic control with no other intervention. At Nagasaki University (International Congress Series v.1209, 2000) diabetic women were fed a low calorie, low-fat diet based on rice and vegetables. Their glycemic status improved, and their glucose levels fell significantly.

Fasting is always a part of any serious natural health program. With most blood sugar disorders it can be difficult to fast on water even for 24 hours dinner to dinner. If you want to know more, the recommended books on fasting are listed in *Zen Macrobiotics for Americans*. When you are cured, it is important you fast one day a week on water from dinner to dinner. This gives your body 52 times every year to rest, recuperate, and heal. Once you see the great benefits, you'll probably choose to do longer fasts. If you can go 24 hours on water only, without problems, then you should do this every week from dinner to dinner.

Chapter 6: Effective Supplements

It cannot be repeated enough that what you eat is the real cure for blood sugar and insulin dysmetabolism. Your daily food is basically what will cure you. Whole natural foods cure disease. Proven supplements and natural hormones are very powerful, but secondary to diet. Supplements are only one of the Seven Steps to Natural Health (p 4). People are understandably confused about which supplements work, and which are merely advertising promotions. This confusion can be explained in one word -advertising. To know which supplements honestly have value, we merely need to look at the published scientific literature, rather than the very well written advertisements that inundate us. Science tells us which supplements really benefit us, not skillful ad writers. Please read my booklet The Supplements You Need. People under 40 only need acidophilus, FOS, beta glucan, vitamin D, vitamin E, flax oil, minerals and vitamins.

First, we need to understand the difference between "endogenous" supplements and "exogenous" ones. Endogenous supplements exist in our bodies, and in the common foods we eat. This would include all vitamins, all minerals, all basic hormones, most amino acids, and such supplements as CoQ10, beta sitosterol, lipoic acid, DIM, PS, and beta glucan. You can, and should, take the appropriate and needed endogenous supplements the rest of your life for your general health. This is especially true if you are over forty. Exogenous supplements do not exist naturally in our bodies, nor in our common foods. This would include such things as herbs in general (e.g. ginseng, echinacea, milk thistle, golden seal, etc.), green tea, curcumin, guggul, ellagic acid, and aloe vera. Even if any of these supplements are appropriate for you, the effect will only last for about six months to a year and then cease. To continue taking them would be a waste of time and money, and could even be counterproductive. Many people are, in fact, allergic to some of these exogenous products. Therefore, we will stress long term endogenous supplements, but still mention the temporary exogenous ones for short term use.

Lipoic acid has so much research on it there is a separate chapter (*Chapter 8: Lipoic Acid*) devoted to the many international published studies on its benefits.

Vitamins and minerals are basic. There are only thirteen vitamins. Never take megadoses of any vitamin (or other supplement), as these overdoses unbalance our metabolism. Regular vitamin B-12 is absorbed very poorly, so pick a supplement with 1 mg of methylcobalamin as the preferred form of B-12. Minerals are so important they are covered in a separate chapter (Chapter 9: The Minerals We Need).

Vitamin C is a very overrated and misunderstood vitamin. Megadoses of this will acidify your normally alkaline blood. Making the blood pH acidic causes your entire system to be sickly. Megadoses of anything - including oxygen, sun, fun, food, sex, or whatever else - are harmful! Understand this simple fact. Vitamin C is only basically found in any quantity in tropical fruits, such as citrus. These are meant for tropical people in hot climates. You find very little vitamin C in temperate climate fruits and vegetables. Diabetics use up excessive vitamin C due to the increased need for all antioxidants. Therefore you should take 250 mg until you are well. The RDA is only 60 mg. Again, do not take more than 250 mg, as this is four times the RDA- Linus Pauling was wrong! Short term studies of megadoses of vitamin C may show limited benefits, but never in the long term.

Beta glucan is a very important supplement to take for all forms of sugar dysmetabolism. The usual dosage is 200 mg, but you should take 400 mg for the first year to improve glycemic control. Beta glucan is the most powerful immune enhancer known to science, including interferon-alpha. It doesn't matter whether you use oat or yeast glucan, as all are 1/3 true glucans. The mushroom glucan is simply too expensive. Please read my book What Is Beta Glucan? to learn more. An entire chapter is devoted to dia-

betes. A good number of human studies have shown the benefits of beta glucan for all blood sugar issues. Beta glucan also has powerful cholesterol and triglyceride lowering activity which, of course, is of great concern in blood sugar dysmetabolism. This is a very important supplement you must add to your regimen, and even healthy children and people under 40 should routinely take this. Eat just a little oatmeal and barley regularly and you won't need to take a supplement.

Beta carotene has been shown to be deficient in most diabetics, but not vitamin A. (Beta carotene is the direct precursor to vitamin A.) Beta carotene is one of the most powerful antioxidants in our diet. Some studies, such as the one done at Jikei University in Japan, show high serum vitamin A levels, but low levels of beta carotene. You only need 10,000 IU here, although you can take 25,000 for the first year if you want to. This is a very effective antioxidant, and should definitely be a part of your program. The Third National Health and Nutrition Examination Survey (*Diabetes* v. 52, 2003) showed low levels of carotenoids (except lycopene) generally in diabetics.

CoQ10 is a basic supplement here, and you must take 100 mg of real Japanese ubiquinone a day. Do not take ubiquinol! Ubiquinol is unstable, and has no shelf life. Some unscrupulous companies offer smaller amounts of CoQ10 with "special delivery systems", that are all but worthless. 100 mg is what you need. Some "experts" recommend 300 to 400 mg a day, but this is a waste of money and not necessary at all. Real Japanese bioengineered can be found (60 X 100 mg) for under \$20. Studies around the world have shown the importance of this for diabetes. For example, at Moradabad Hospital in India (Antioxidants in Human Health and Disease 1999), a review with 59 references on the benefits of CoQ10 for diabetes and CHD was published. CoQ10 is a powerful and basic supplement.

Beta-sitosterol is found in every vegetable you eat, but there just isn't enough in our daily food. It is estimated the average

American eats about 300 mg daily, while vegetarians eat twice that amount. Vegetarians have far less blood sugar problems. Take 300 mg a day of mixed sterols (mixed sterols is the only form available). You should take 600 mg a day for the first year, and then just 300 mg. Beta-sitosterol is the most effective natural remedy known for both prostate problems and high blood fats (cholesterol and triglycerides). At the Gerontology Clinic (*Vnitrni Lekarstvi* v. 50, 2004) blood levels of these plant sterols were shown to be very important in diabetic patients. "In diabetics the level of disease compensation correlated negatively with plant sterol values". You can read more about plant sterols in my book *Lower Cholesterol Without Drugs*. All this is strongly related to cholesterol and triglyceride dysmetabolism.

Acetyl-L-carnitine (ALC) is the preferred form of L-carnitine, as it is more bioavailable, and passes into the brain more easily. 500 mg a day is the appropriate dose. There are a number of studies on both forms, but you will get all the benefits of plain L-carnitine by taking the acetyl derivative ALC. At the Instituto di Medicina in Italy (Metabolism v. 49, 2000) type 2 diabetics were given ALC. This effectively increased their glucose disposal and utilization. They concluded this was an important therapy. ALC is an important supplement for anyone over 40 for brain function, memory, and clarity of thought.

Vitamin D is not a vitamin at all, but rather a hormone. It does not occur in our food, except very small amounts in a few animal foods such as eggs. This is the most important "vitamin" of all for blood sugar problems. Your daily vitamin supplement should have 400 IU, but you should take another 400 to 800 IU for many reasons. You should be getting a total of 800 to 1,200 IU of vitamin D, unless you are out in the sun regularly. In the summer, if you get regular exposure to the sun, you can just take the 400 IU in your vitamin supplement. Most Americans are clearly deficient in "vitamin" D, as most of us do not get out in the sun regularly, especially in winter months. Science proves low serum levels are epidemic, correlated with endless illnesses, and clearly related to

all-cause mortality and length of life. The international research is very strong here.

Vitamin E is the second most important vitamin for blood sugar problems. Vitamin E is also very deficient in our diets, because we eat a mere 1% whole grains (the main source). Always use the *natural mixed* tocopherols for a few dollars more, and not the inexpensive single tocopherol (d-alpha). You should only use 200 IU a day (or 400 IU every other day). Do not exceed this, since the RDA is only 30 IU. The international, published research on this is simply overwhelming. Vitamin E is one of the most powerful of all natural antioxidants, and must be a part of your healing program. This is very good for your heart and arteries.

Hunan Medical University gave vitamin E to type 2 diabetics with dramatic benefits in only 30 days. The University of Chieti in Italy showed significant benefits in only 14 days in type 2 diabetics. Vitamin E supplementation should be standard practice. The research here is obviously overwhelming, and can't possibly all be quoted. People of all ages should use vitamin E since we get so little in our diets.

Flaxseed oil is the best source of omega-3 fatty acids, and better than fish oil for a lot of reasons. All the studies on fish oil would be even more effective with flax oil. Regardless of your age, take a 1,000 mg flax oil capsule every day. Or ½ teaspoon of bulk flax oil. Buy and keep this refrigerated—do not buy unrefrigerated flax oil, as it easily oxidizes. We eat far too much omega-6 fatty acids, and far too few omega-3s. The research is overwhelming on the benefits of omega-3 supplementation for health blood sugar metabolism, as well as CHD health, and blood lipids.

At North Dakota University (*Nutrition Journal* v 44, 2011) "Flaxseed supplementation improved insulin resistance in obese glucose intolerant people" was published. The results were no less than dramatic. There are many such studies using real flax seed to help cure diabetes and other blood sugar issues. The research here is too much to continue with. This is a definite!

L-glutamine is a proven amino acid for good intestinal health. You should take a gram (two X 500 mg) in the AM and another gram in the PM. You can also take a tablespoon of inexpensive bulk glutamine powder every day for even better results. This will also spike (temporarily raise) your growth hormone levels. While L-glutamine has shown no specific value for blood sugar problems, always remember we are treating *the whole body*, and not just our glucose metabolism. Regardless of our age, our digestive systems are generally in terrible shape from our poor diets. Taking L-glutamine, with a good brand of acidophilus and FOS, will help us digest our food well. Strong digestion is an important part of maintaining normal blood sugar and insulin levels.

Fructooligosaccarides (FOS) are indigestible sugars that feed the good bacteria in our intestines, but not the "bad" bacteria. This will not help blood sugar dysmetabolism directly, but will help keep your intestines healthy to better digest your food which helps normalize glucose metabolism. Taking 750 mg once or twice a day works very well with acidophilus and L-glutamine to keep our digestive system strong and healthy.

Acidophilus keeps the good bacteria in our intestines alive. Find a good refrigerated brand and keep it refrigerated. Take 6 billion units (with 8 strains) once or twice daily, and use FOS and L-glutamine with it. This will help strengthen your digestion.

Phosphatidyl serine (PS) is a relative of lecithin or phosphatidyl choline. Only in the last few years has inexpensive PS become available to the public, and the human research verified its value. Take 100 mg a day if you are over the age of 40 to support good brain function. This is not going to help glycemic control per se, but you are treating your total health, and not just glucose metabolism. Pregnenolone and acetyl-L-carnitine work very well with PS. You can also benefit from taking a 1,200 mg softgel of **lecithin** for both better brain metabolism and lower cholesterol and triglyceride levels.

Glucosamine will not specifically help your blood sugar condition, but it is an important supplement for anyone over the age of 40. Literally 95% of Americans over the age of 65 suffer from arthritis and joint inflammation. Glucosamine 500 -1,000 mg a day is a proven supplement for bone and joint health. Do not take chondroitin, as it is not absorbed by our intestines and is therefore useless. Glucosamine cannot work alone, and must have a complete supply of minerals, flax oil, and vitamin D to be effective.

Superoxide dismutase (SOD) is one of our two main antioxidant enzymes. Unfortunately, oral SOD pills don't work, nasal sprays are illegal, sublingual SOD isn't available, and the use of DMSO transdermal solutions is prohibited. Oral SOD tablets are worthless. Doctors don't know how to inject this, and it wouldn't be practical anyway. Nevertheless, SOD is very important to blood sugar problems because of the antioxidant stress. The University of Tiemcen in Algeria found low SOD blood levels in type 2 (but not in type 1) diabetics. Hyogo University, in Japan, found low SOD in type 1.

What can we do? Fortunately, we can keep our SOD levels elevated with diet, supplements, exercise, lifestyle, and generally supporting our antioxidant defense system. By eating well, exercising, balancing your basic hormones, not taking prescription drugs, and avoiding negative habits (such as coffee, alcohol, cigarettes, recreational drugs) you will have higher SOD levels.

Glutathione is our other basic antioxidant enzyme. You can take oral glutathione, but it is not as effective as NAC. NAC is *N-acetyl cysteine*, and is a much more effective way to raise your glutathione levels than glutathione itself. Take 600 mg a day. The other varied benefits of NAC have been well documented in the last ten years. In diabetic conditions glutathione has been shown to be of great importance because it is so basic to our antioxidant process. This is a vital supplement for blood sugar conditions, and much research has been done here.

Soy isoflavones can be taken in 40 mg doses of combined genestein and diadzein. It is unrealistic to think we are going to get a sufficient intake of these valuable isoflavones by eating a variety of soy products. Tofu is the white bread of soybeans, is highly refined, and lacking in nutrition. Westerners rarely eat any amount of soy products such as miso, seitan, soy flour, tempeh, or other traditional Asian foods. Soy sauce is merely a condiment. There is an overwhelming amount of published research on the benefits of soy supplementation. Anyone who tells you soy is "bad" for you is mentally deficient. The dairy and meat industries are very upset by the popularity of soy products, especially soy milks. Billions of Asians for centuries prove the value of soy isoflavone intake. Okinawans eat more soy than anyone, and live the longest of all.

DIM (di-indolylmethane) is a fine supplement, and better than I3C (indole-3-carbinol) for improving estrogen metabolism. Take 200 mg of DIM daily. All "special delivery systems" are just expensive advertising promotions.. DIM is oil soluble, so just take it with your food or with your flax oil. If you test your free estradiol and estrone levels, and find them to be in the low normal (the ideal) range, you won't need to take this. Men over the age of 50 generally have higher estradiol and estrone levels than their postmenopausal wives! Excess estrogen in men or women is harmful, and low normal levels are best. American and European women rarely have insufficient estrogen levels due to their high-fat, low fiber, nutrient deficient diets, obesity, lack of exercise, and other factors. Asian women who have lower estradiol and estrone (but not estriol) levels have less heart disease, osteoporosis, and menopausal problems. The idea that American women generally are somehow "estrogen deficient" after menopause is silly.

A complete program of natural supplements is vital for healing, but will never compensate for poor diet, lack of exercise, and other basic factors.

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Chapter 7: Temporary Supplements

There are a variety of temporary supplements to take for up to a year. Most of these are "exogenous", and not in our bodies or in our common food. The rest are endogenous (in our bodies and common food), but just not needed after about a year.

TMG (betaine) or trimethylglycine is the most powerful liver rejuvenator known. Taking 3 grams a day (6 X 500 mg capsules) for six months to a year will do wonders to cleanse and strengthen your liver. The liver is the largest internal organ, and vital to blood sugar metabolism. Our livers supply glycogen (blood sugar). Liver problems, especially such conditions as fatty liver, are central to blood sugar problems. While TMG is endogenous, there is just no reason to use this much for more than a year. You can take 1 gram (2 X 500 mg) as a permanent supplement after this. This is a very important addition to your healing program. The human studies are excellent. To cure diabetes you must have a strong healthy liver.

Vitamin C was covered in the previous chapter. It must be emphasized that megadoses weaken your immunity in the long run. It is *not* a dietary deficiency of vitamin C here at all, but rather the fact the body is using up all the vitamin C and other antioxidants it can get to balance the free radicals. You should *only take 250 mg* for a year, and then the 60 mg in your vitamin supplement is enough as a permanent one. *Never overdose on this!*

Aloe vera is a classic healing herb that helps our digestive system, and our liver among, other benefits. Taking 2 X 100 mg capsules of a 200:1 extract is easier than trying to drink the equivalent of 40 grams of fresh gel. Aloe gel is 99.5% water. Just six to twelve months as it is exogenous.

Ellagic acid has no proof of efficacy for blood sugar disorders per se, but has shown very powerful anti-cancer and

other effects. Taking 100 mg a day for six months to a year will help your immunity in general.

Milk thistle is the most effective herb for liver health. Taking 2 capsules of a good extract every day for one year will work with the TMG to strengthen your liver. Milk thistle is the most researched herb for liver health, but is exogenous and will not help you after a year. There are many human studies on the active ingredient silymarin.

Taurine finally has good human science behind it for diabetes. Numerous animal studies showed great promise here, and now real people verify this. Take 500 mg of taurine daily for one year. This inexpensive amino acid also has much value for coronary heart conditions generally, and helps lower blood fats and blood pressure. Beijing Hospital in China, Cardiology Research Center in Moscow, Bengbu Medical College in China, and Research University in Italy all showed improvement in glucose levels, insulin sensitivity, blood parameters, and other benefits in both type 1 and 2 diabetes. Studies at the University of Messina, and the Diabetes Unit in Italy, showed diabetics had low blood plasma and platelet taurine levels. In 2004 an extensive review of the literature with 114 references from the University of Sassari in Italy showed that taurine supplementation is valuable in treating diabetes and insulin resistance. Take until you are well.

Curcumin taken in 500 mg amounts daily for six months to a year is a powerful and proven natural antioxidant. Good studies.

Green tea extract is very worthwhile. Just take two capsules daily. Green tea is simply regular old tea (Thea sinensis) that is not fermented. There is a lot of good research on green tea polyphenols, but all of it is short term only. The fact it *must* have the caffeine removed to be safe is rather worrisome. This must be decaffeinated! It is unlikely you will drink two cups of decaf green tea every day, so the capsules are much more practical.

Quercetin is technically an endogenous antioxidant although basically only found in apples and onions. You can take 100 mg daily for one year. Only one study was found where diabetic animals improved with quercetin supplementation. There is good science on the antioxidant benefits of quercetin.

Polysaccharide plant gums such as *glucomannon*, *guar gum*, *pectin* (citrus or apple), and *sodium alginate* (from seaweed) are very valuable, inexpensive, and safe temporary supplements. These gums have shown value in lowering cholesterol, blood sugar normalization, removing toxic metals, and other benefits. Take at least 3 grams a day (6 X 500 mg capsules) to get real benefits. Choose the one you prefer, the one that is least expensive, or try each of the four above for three month periods successively. The added rewards of lowering cholesterol and triglycerides will be an important factor in your healing. Some people have lost weight using these, since the gums swell up dramatically with water, and fill the stomach. This gives you a feeling of having eaten when you haven't. The science here is very strong. "*Modified*" citrus pectin is expensive and has no benefits at all.. Buy regular inexpensive fruit pectins.

At the 7th annual Gums and Stabilizers Conference, in England, researchers reviewed the benefits of these gums and found, "improved glycemic control and a reduction in plasma cholesterol", which, of course, are precursors to diabetes. At the University of Helsinki a review with 59 references was published showing guar gum therapy had favorable long-term effects on glycemic control and lipid levels in NIDDM subjects. At St. Marianna University in Japan (*Eiyogaku Zasshi* v. 56, 1998) galactomannon (from fenugreek) was found to benefit by feeding five grams a day to type 2 diabetics. At the Institute of Investigations, in Cuba guar, pectin and glucomannon were all shown to help remove toxic heavy metals from the blood, improve digestion generally, and lessen the effects of diabetes.

L-arginine is an overrated and promoted amino acid with

little scientific evidence behind it. There are a few possible studies, however, for blood sugar conditions. You can use 3 grams (6 X 500 mg) daily for one year. At the University of Vienna L-arginine was found to inhibit lipid peroxidation in human diabetics. At the Medical College of Wisconsin diabetic rats benefited from L-arginine in their water. At Cumhuriyet University in Turkey rabbits lowered blood glucose levels with oral L-arginine. Arginine is commonly promoted without clinical backing. This is an optional supplement, as it is not well clinically proven at all.

Asian or American ginseng can be used temporarily, but not in hot weather, or in tropical climates, because of its extreme yang (warm) nature. Find a reliable brand, and take one or two capsules a day during the coolest six months of the year (October thru March in the Northern Hemisphere).

Nopal cactus has been promoted for normalizing blood sugar levels, but where is the evidence? There are no human or animal studies published in any of the international medical journals. There is just no reason to use something unproven like this, when you have so many proven supplements to use. Bitter melon (Momordica) has also been promoted for blood sugar problems, but, again, where is the evidence? Banaba leaf has corosolic acid in it, and has been promoted for blood sugar problems. The published evidence is just not convincing so far. Fenugreek herb (containing galactomannon fiber) has been commercially promoted for diabetes, but the science is lacking here, too. Conjugated linoleic acid (CLA) has been promoted for weight loss as well as diabetes, but, again, the evidence isn't there.

The herb most promoted for normalizing blood sugar is Gymnema sylvestre. There are just no valid human studies here. Remember that exogenous supplements will not work for some people, and will be biologically incompatible (allergenic) in others. If you feel any of these temporary supplements are not compatible with your individual biochemistry then drop them. Some people will get mild side effects from exogenous supplements like these.

Chapter 8: Alpha Lipoic Acid

Lipoic acid (aka thioctic acid) or "LA" is a natural antioxidant in our bodies. This is the most important single supplement you can take for diabetes and blood sugar disorders. There is no lipoic acid in our daily food. It does not exist in the free form in our bodies, but rather as dihydrolipoic acid (DHLA). You are not going to get any from your diet. Do not think this is a Magic Supplement that can work alone. Diet and exercise is the basic cure for blood sugar dysmetabolism, while supplements and hormones play a secondary role. The research on lipoic acid is so overwhelming, we are going to devote a separate chapter to it.

Actually, lipoic acid is a disulfide (two sulfur atoms) that is converted in the body to dihydrolipoic acid or DHLA. The lipoic acid of commerce, and the one used in nearly all the studies, is equally composed of two mirror image (racemic) isomers R- and S-. Almost every one of the published studies use the regular racemic natural R/S form. You will see Internet advertisements claiming that only the very expensive R-isomer has biological value, while the S-isomer is somehow ineffective. R-only lipoic acid is a promotion for money, with no science behind it! Do not be taken in by such unfounded unscientific promotions. Clinical studies using these R- and S- forms separately found that they equally convert to DHLA (General Pharmacology v 29, 1997). Just use regular, normal, everyday, inexpensive R,S-lipoic acid.

Anyone over the age of forty should take lipoic acid as part of their basic supplement program for its powerful antioxidant properties. For most people 400 mg a day is sufficient. Clinical studies have used up to 1,000 mg, but only in the short term. Injected lipoic acid is much more effective than oral use, but very impractical obviously. Overdoses of lipoic acid, or anything else, merely unbalance our metabolism, and are contraindicated. If you have a serious problem, you can safely take 800 mg a day for one year, Just use 400 mg in the AM, and another 400 mg in the PM, to

maintain maximum blood levels. Lipoic acid is safe, inexpensive, and non-toxic, but there just isn't any reason to take more than 400 mg for the long term. Short term studies have used higher doses, but you'll be doing long term therapy.

At Eberhard-Karls University in Germany (BioFactors 10, 1993) a study, "Thioctic Acid- Effects on Insulin Sensitivity and Glucose Metabolism" was done. They pointed out that, "Thioctic acid is a co-factor of key mitochondrial enzymes, involved in the regulation of glucose oxidation, such as the pyruvate dehydrogenase and the alpha-ketoglutarate dehydrogenase, both enzyme complexes which are known to be diminished in diabetes". In plain words, this means lipoic acid works with our body enzymes to prevent glucose from being oxidized. Their conclusion was, "The clinical and experimental date indicate that this compound has beneficial effects on insulin sensitivity, correcting metabolic pathways known to be altered in type 2 diabetes, such as insulin stimulated glucose uptake, glucose oxidation, and glycogen synthesis". The authors quote two human studies published in Diabetologica 1995 and Arzneimittelforschung 1995. Here insulin sensitivity was increased from 27% to 51% in merely 10 days! This is nothing less than incredible! No dangerous, synthetic, toxic prescription drugs can even start to approach results like that.

At the University of Southern California (*Nutrition* v 17, 2001) "Molecular Aspects of Lipoic Acid in the Prevention of Diabetes Complications" was published. People with diabetes suffer from an endless list of complications, eventually ending in premature death. These include vascular (heart and artery) disease, cataracts, retinopathy (vision loss), and neuropathy (nerve deterioration. "The available data strongly suggest that LA, because of its antioxidant properties, is particularly suited to the prevention and/or treatment of diabetic complications...In addition to its antioxidant properties, LA increases glucose uptake...Further, recent trials have demonstrated that LA improves glucose disposal in patients with type 2 diabetes. In experimental and clinical studies, LA markedly reduced the symptoms of diabetic path-

ologies, including cataract formation, vascular damage, and polyneuropathy". Rather powerful statements from top doctors in the best hospitals.

Reviews are always best. A most impressive seventeen page, heavily documented review, "The Pharmacology of the Antioxidant Lipoic Acid", from Vrije University in Amsterdam (General Pharmacology v. 29, 1997) leaves no doubt about the effectiveness. Here they prove that the R- and S- isomers equally convert to DHLA in humans. Do not waste your money on R-only lipoic acid. This review is about the antioxidant properties of LA for general health, rather than the benefits for diabetes specifically. The language here is highly technical, and refers to reactive oxygen species (ROS), NADH, chelation, oxidative stress, and other such topics. In plain English, they show LA supplements to be a most powerful and proven antioxidant, that has many benefits as we age. It is an important overall anti-aging supplement everyone over 40 needs.

At the University of Arizona (Oxidative Stress and Disease v. 8, 2002) a long, well documented review was done on hyperglycemia and insulin resistance. They strongly suggest using LA as a therapy for both conditions. Further, they discuss the underlying mechanisms for using LA in diabetic and pre-diabetic conditions, so we can better understand how it is so effective. At Oregon State University (Current Medicinal Chemistry v. 11, 2004) a 12 page review with extensive references was done showing the power of LA to help ameliorate the path-ophysiologies of many chronic diseases, and not just diabetes, and other forms of blood sugar dysmetabolism. They found lipoic acid therapy to have dramatic benefits in patients in only 30 days. This was true, not only for diabetes, but also other diseases associated with oxidative stress. LA was found to be an effective agent to ameliorate certain pathophysiologies of many chronic diseases. Here the evidence was examined for the effectiveness of lipoic acid against such age-related disorders unwarranted diverse as (programmed cell death), cardiovascular disease, and cataract

formation. The famous Mayo Clinic, in Minnesota, did a most impressive 16 page review, complete with 77 references (*Antioxidants in Health and Disease* v 6, 1997) on lipoic acid. This study leaves no doubt as to the proven effectiveness on any disease associated with oxidative stress- including blood sugar disorders generally. At the University of California, in Los Angeles, a sophisticated review, with an impressive 78 citations (*Toxicology and Applied Pharmacology* v 182, 2002), was done on the general antioxidant and pro-oxidant properties of lipoic acid. They showed both lipoic acid and dihydrolipoic acid exhibit direct free radical scavenging properties. Other studies provide evidence that lipoic acid supplementation has pro-oxidant prop-erties, decreases oxidative stress, and restores reduced levels of other antioxidants in real people.

Three different reviews were done at the University of California, in Berkeley, another good review with 34 references (*Annals of the NY Academy of Sciences* v 738, 1994)was done on the properties of lipoic acid in relation to oxidative stress and disease. Another was published in *Environmental & Nutritional Interactions* v 3, 1999). This thorough 28 page article showed the effectiveness of LA for diabetes itself and the serious complications that comes with it. Neuropathy is the worst side effect of diabetes. Many dozens of studies show that LA alone helps relieve the symptoms of monopoly, autonomicand peripheral neuropathy. A third from *Oxidative Stress and Disease* v 4, 2000 had 38 references. This demonstrated the dramatic antioxidant effects of LA.

There are many other published human studies from around the world on the benefits of oral lipoic acid supplementation for blood sugar and insulin metabolism. Make this a part of your supplement program to prevent and cure blood sugar issues.

Chapter 9: We All Need Minerals

We're all mineral deficient, every one of us. No matter how well you eat, or what supplements you take, you're still lacking in some of the vital elements you need. Every illness is due in part to mineral deficiency of some kind. Our soils are depleted of minerals. Our food lacks minerals. We don't eat well anyway. Please read my booklet *The Minerals You Need* to learn about the essential elements that science has shown us we need in our bodies, but don't get. This is the most researched and comprehensive book ever written on minerals, and is very easy to read. There are 96 natural elements, but modern medicine only recognizes ten of them as essential. This is irrational and defies logic. While sodium, potassium, phosphorous, and sulfur are all essential elements, we get enough of these in our food. Let's look at the twenty-one elements we are known to need for optimal health.

Calcium is very misunderstood. The idea that we need 1,000 mg a day is ridiculous, and the official government RDA is not based on science whatsoever. The only abundant source of calcium is dairy products, and at least two thirds of the world's population does not include dairy foods in their diet. Billions of Asians prove this. You cannot possibly get 1,000 mg of calcium a day without eating dairy foods. You should not eat dairy foods because of the lactose (milk sugar) and casein content. All adults of all races are lactose intolerant- period. Americans and Europeans eat more calcium than anyone on earth, yet have the highest rates of bone and joint disease, especially arthritis and osteoporosis. Obviously, calcium intake isn't the problem, but rather calcium absorption. You need- at the minimum- magnesium, boron, silicon, strontium, omega-3s, and vitamin D in order to absorb the calcium. You aren't getting enough of these nutrients. There are certainly other nutritional factors in calcium absorption we haven't discovered yet. Taking 250 mg a day of any common, inexpensive calcium salts such as citrates and carbonates is sufficient. Overdosing yourself on calcium is irresponsible, and won't benefit you. More is not better.

Magnesium is the most studied and most important element in diabetes. Magnesium is vitally important for our total health since, we're generally deficient in it. One in seven Americans is seriously deficient according to blood analysis studies. The major source of magnesium is whole grains, yet almost all of the grain we eat is refined. Americans only eat 1% whole grains. The RDA is 400 mg, so taking 200 mg is good. Citrates, lactates, or oxides are good choices. There is overwhelming evidence that magnesium is critical to blood sugar and insulin metabolism, as well as outright diabetes.

Iron is very important, as it is the "heme" in blood hemoglobin. Women need more than men, and studies consistently show that Americans are generally iron deficient, especially women, vegetarians, and the elderly. People with diabetes may have a problem excreting iron, and end up with excessive blood levels of it. This is a rare condition, which is not due to excessive intake, but rather inability to get rid of unneeded iron. Just be careful not to take more than 18 mg a day. Studies also prove *iron from animal foods* is the real culprit. Men need about 10 mg a day, and women about 18 mg. Common, inexpensive salts such as sulfates, fumarates, and gluconates are good. Again, diabetics often show a problem with iron retention, and high blood ferritin (iron) levels.

Zinc is also deficient in our diets generally. Whole grains and beans again are the primary source, yet what little grains we eat are almost all refined with the nutrition removed. Eating whole grains and beans (legumes) every day will go a long way in raising your levels. The elderly, the poor, and people who drink alcohol have the lowest levels generally. The RDA is 15 mg. You have to be careful not to take too much zinc, as *amounts over 50 mg* can cause side effects. This is a heavy metal, and can accumulate in the body. The problem in diabetes is poor zinc *metabolism*, rather than deficient intake. There are many clinical studies showing poor zinc metabolism in blood sugar conditions. Common, inexpensive salts

such as citrates, sulfates, or oxides are good.

Boron is acknowledged as an essential element, but the RDA has never been set. It was only in 1990 that boron was even accepted as essential! A valid estimate is 3 mg a day, but Americans generally only eat about 1 mg. Our soils are boron deficient, our food is boron deficient, and vitamin supplements rarely contain what you need. Boron is necessary for calcium absorption, among many other important processes. You would think that all widely sold vitamin and mineral supplements would contain 3 mg of this inexpensive and vital element, but very few actually do. Any common salt such as citrate, or even plain boric acid is fine. It must be emphasized how important it is to get boron in your diet every day. Our soils and foods are very deficient. You cannot absorb calcium without sufficient boron. The published research here is overwhelming. Take 3 mg a day of boron.

Manganese has overwhelming research on it for its value in human and animal nutrition. The RDA was only recently set at 2 mg. Many people do, in fact, get that much in their food. Whole grains, beans, and leafy vegetables are the best sources. We only have about 20 mg of manganese in our entire bodies. You can take any normal form such as sulfates or oxides.

Copper also has an RDA of 2 mg. Common salts such as citrates, oxides, or gluconates are good. Americans only get about half this much in their food. Whole grains and beans are the best source. Copper levels vary greatly in diabetics; some have low blood levels, while others have high levels. Our bodies contain a total of only about 150 mg. Anything over 15 mg daily could cause side effects, as it is a heavy element. It is almost impossible to get excessive copper in your diet, even with copper water pipes in your home. Inexpensive salts such as citrates, gluconates, or oxides are very bioavailable.

Silicon is a vital, yet ignored, element with no RDA set, even though it has been proven essential in human and animal

health. You will almost never find this in any vitamin supplement. A good dose is 10 mg, although you probably don't need that much. It isn't toxic, so 10 mg would be a safe and effective amount. Silicon levels in common foods vary so greatly, it is hard to be more precise. Plain silica gel (silicic acid) is the best form to take. Do not use horsetail herb. Make sure the label says silicic acid. One major need for silicon (not to be confused with siliconewhich is a polymer of silicon and oxygen) is for bone and joint metabolism, and calcium absorption. Why aren't vitamin companies putting this inexpensive, essential element in their formulas? Be sure to get silicon in your mineral supplement.

Iodine is most needed for thyroid metabolism. The RDA is 150 mcg, and most mineral supplements have this. There are only about 30 mg (30,000 mcg) of iodine in your body, and three fourths of this is in your thyroid gland. If you have low T3 (triiodothyronine) or low T4 (L-thyroxine), you should take bioidentical hormones to raise them. Iodine supplements will *not* raise your hormone levels. Seaweed and kelp are the best sources, but the problem here is that they are *too* good! While Asians often eat sea vegetables as a staple, a mere teaspoon of kelp powder can contain twenty times the RDA. This can cause side effects such as skin problems. Megadoses of any mineral are clearly contraindicated. You do not need iodized salt, by the way.

Chromium has finally gotten an RDA of 120 mcg. This is toxic in high amounts, so don't exceed 400 mcg. The research is most impressive here. Chromium has dozens of published studies showing that people with diabetes usually have deficient levels. This is due to lack of chromium in their food. It must always be emphasized that we need *all* the known essential elements, and not just ones like chromium that are proven to benefit glucose metabolism. Again, whole grains are the best source, and the refined grains we eat lack any significant amounts. You can take inexpensive chelates (a metal ion bound to non-metal ions) here. Do not listen to advertising telling you that a certain patented form is the "best", or "only", form that works. The research on chromium and

blood sugar metabolism is overwhelming. This must be in your supplement program.

Vanadium has finally been accepted as an essential element (not a mere trace element), but no RDA has been set. There is overwhelming recent research on blood sugar metabolism and vanadium in the last decade. Scientists around the world have studied this for diabetes and Syndrome X in dozens of published studies and reviews. Therefore, vanadium becomes overemphasized as a diabetes mineral, and the other supporting minerals that work with it are ignored. While there is no RDA, a daily dose 1,000 mcg (1 mg) is sufficient. It is not a good idea to take more than this, although short term studies have used more. Using more than one milligram is very irresponsible, and will result in vanadium toxicity eventually. Take only 1 mg daily. Inexpensive chelates, or vanadyl sulfate, are both good choices. You will almost never find this in vitamin supplements. This must be in your supplement program, as it is proven to be essential, not only for blood sugar metabolism, but your general health.

Molybdenum has an official RDA of 75 mcg, but some scientists feel this is too low. This in most vitamin-mineral supplements. Inexpensive common salts are all good sources. Molybdenum is safe and non-toxic, even though it is a very heavy metal. Research on molybdenum is extensive, and goes back decades. Progressive farmers use this to fertilize their soils, and ranchers to insure the health of their livestock. Deficiency is not widespread here, but taking a mere 75 mcg a day is good insurance, especially since dietary intake varies so greatly.

Selenium has an official RDA of 70 mcg, which was only recently established. Deficiency is common, because the main source is whole grains, and most all our grains are heavily refined. Chelates are the best form here. Taking 200 IU of natural mixed tocopherol vitamin E works synergistically, and helps selenium metabolism. Do not take more than 200 mcg, as toxicity can occur over this amount. It is a heavy metal, and will accumulate in the

body if overdoses are used. This is a very important antioxidant element, and fights free radicals. Studies have shown people with low selenium intakes have more cancer, heart and artery disease, diabetes, and other illnesses. Generally, most vitamin formulas contain the 70 mcg you need.

Germanium is something you almost never find in any vitamin-mineral supplement. There is no RDA here. Science has proven this is, in fact, essential. 100 micrograms would be a good dose, as it is an ultra-trace element. In 1988 a very impressive review was published in the journal Medical Hypothesis complete with 72 references. This showed the importance of germanium in human and animal nutrition. Very irresponsible promoters offer 100 mg (100,000 mcg!) doses. This is one thousand times what you need - a three year supply every day! Germanium sesquoxide is safe, but germanium dioxide is not. You will almost never find a supplement with 100 mcg of germanium for a complete minerals program. This is an essential element.

Strontium has no RDA, but is definitely essential, and needed for calcium absorption. Do not confuse this with radio-active strontium-90! A good dose would be 1,000 mcg (1 mg) a day. A chelate or aspartate is a good choice. There is no need to take more than this, although some irresponsible natural health "experts" recommend much more. Food and blood analysis studies around this world show that 1,000 mcg (1 mg) a day is certainly enough. Doctors prescribing 250 mg of strontium ranelate is outright insanity! Make sure this is in your supplement.

Nickel has no RDA, but is definitely an essential element. This is an ultra-trace element, and 100 mcg would be a reasonable dosage based on various analyses of human dietary intake and blood analyses. The published research has concentrated on animals rather than humans. The few human studies we have are most impressive however. You'll almost never find meaningful amounts in any supplements, so look for one with 100 mcg.

Tin has no RDA, but is definitely an essential ultra-trace element. A reasonable dosage would be 100 mcg, but the FDA irrationally limits this to 30 mcg. The same comments apply regarding research on tin as to that of nickel. Human research has found low tin levels in various pathological conditions and diseases. We need more human research on tin. You'll almost never find meaningful amounts in any of the supplements currently in the marketplace.

Cobalt is a very neglected element, although it is the central atom for chlorophyll in plants and vitamin B-12 in animals. Humans cannot synthesize B-12 without available cobalt, and oral vitamin B-12 supplements are barely absorbed. (Use 1 mg of methyl cobalamin as your B-12 source.) We probably only need about 25 mcg of cobalt a day, but it is not toxic and you could certainly take up to 100 mcg. This is a very important ultra-trace element, even though it is needed in such tiny amounts. Almost no mineral supplements contain cobalt.

Cesium has no RDA, but is certainly essential. This ultratrace element has proven value from extensive research, especially in human blood. It is almost impossible to find in any supplements. 100 mcg would be a reasonable dose, although irresponsible promoters have been recommending much larger, toxic quantities supposedly to cure cancer and "alkalinize" the body. This is an ultratrace element, and 100 mcg is an ideal dose.

Rubidium has no RDA, is not a mere trace element, and is definitely essential. 500 mcg would be a reasonable dose. Why is an element that is needed in such large amounts and found in large amounts in common foods misnamed a "trace" element? Rubidium is very ignored for some reason. No deficiency has been shown for this however. This is found rather abundantly in common foods.

Gallium is an important, but ignored, ultra-trace element. 100 mcg of gallium nitrate is a good dose. Human blood studies, as well as animal and food studies prove this is essential. It is found

in all our organs. The earth's crust has an amazing 10 mg per kg of gallium. A Japanese study showed people were only taking in a mere 12 mcg a day. Other human blood and organ studies indicate common deficiency.

Let's talk about other essential, and possibly essential, ultra-trace elements. Tungsten is definitely needed. Barium is definitely essential. Lithium is definitely essential, but we seem to get sufficient amounts in our food. Doctors giving people 1,000 times the needed amount for depression is irresponsible and very dangerous. Titanium has evidence showing it to be essential. Europium seems to be essential, and research will probably validate this within the next ten years. Lanthanum considerable research behind it, and is probably essential. *Indium* is claimed to have numerous benefits on Internet sites, but published research simply doesn't verify any of this. Neodymium has shown potential in animal as well as human metabolism. **Thulium** (not thallium) has soil and edible plant studies to indicate its importance, and animal studies will soon tell us more. **Praseodymium** has some animal and human research that indicates value for our health. *Gandolium* may also be shown to be essential eventually. Samarium is found in our blood in significant amounts. Yttrium may be essential. Cerium has evidence it may be needed. *Erbium* is found in our blood and food. *Dysprosium* may be essential as well.

We need all the known essential elements and not just some of them. All elements work synergistically and harmoniously together, in concert, as a team. You must get all of them, and not just some of them. We know there are at least twenty-one we need. Look up "mineral supplements" on the Internet to find one that has the minerals you are known to need.

Chapter 10: Your Basic Hormones

Insulin is the primary hormone involved in glucose metabolism, but it is only one of our basic hormones (12 in men and 15 in women). We should understand that *all hormones work together synergistically in concert together, in harmony as a team.* Just like minerals. People with blood sugar dysmetabolism generally have been shown to have other hormones out of balance. It is important that you try to balance all your basic hormones. You want to strive for the youthful, ideal hormone levels you had at age 30. You do not want "normal" levels found for older people. We will go over each one of these separately. In the next chapter we'll talk about how to test your hormones with blood and saliva.

As with minerals, if one member of the team isn't doing well, all the other players are strongly affected. It is of little value to balance a few of your hormones, and ignore the others. All your basic hormones must be balanced as much as possible in order for them to work together harmoniously. Men and women have exactly the same hormones, only in different amounts. Let's briefly discuss the fifteen basic human hormones:

Testosterone

DHEA

Melatonin

Pregnenolone

Growth Hormone

T3

T4

Insulin

Androstenedione

Progesterone

Estradiol

Estrone

Estriol

Cortisol

(Cholesterol)

Testosterone is not the "male hormone" at all, even though men have about ten times as much as women. Men and women both need youthful levels of this primary androgen. Please read my book Testosterone Is Your Friend - A Book for Men and Women. This is the most researched, comprehensive, and informative book available on testosterone. Men cannot have hyper levels, as the testes cannot overproduce this. Even if men oversupplement with testosterone, the excess basically spills over into estradiol and estrone. Overdoses just make estrogens in men. Literally over 90% of men over the age of 50 have low testosterone, and would benefit from supplementation. Women have only about a tenth of the blood testosterone that men have, but they can have deficient or excessive levels. Hyper levels in women can only be lowered by diet and lifestyle, not dangerous prescription drugs. A high level of testosterone, androstenedione, and/or DHEA in women is called "androgenicity". This is a hallmark of polycystic ovaries - a very common condition. Studies repeatedly show diabetic men generally have deficient levels, while women generally have excessive ones. Doctors generally have no idea how to accurately measure testosterone, much less administer it. They usually prescribe dangerous injections, toxic oral salts, or very overpriced patches and weak gels. Transdermal creams or gels of natural testosterone, and sublingual tablets or drops of testosterone enanthate are the preferred methods. (Natural testosterone tastes terrible.) Transdermal creams and gels generally only deliver 20% into the blood, so 80% is wasted. DMSO solutions deliver about 98%, are safe and effective, but are not allowed under FDA regulations. Nor are nasal sprays. Men make about 6-8 mg a day, so they generally only need about a 3 mg (3,000 mcg) daily dose in their blood. This means a man would use a daily 4 mg sublingual tablet or drops of a salt (containing 3 mg actual testosterone). A woman would use a daily 200 mcg sublingual tablet or drops of a salt (containing 150 mg of actual testosterone). Women make about 300 mcg a day, so about 150 mcg in their blood is a good daily dose, since they store testosterone more efficiently. If a man gets a 100 g tube of 3% natural (3g per 100 g) cream, each half gram will have 15 mg. He can expect 3 (20%) mg to actually go into his blood. The tube will

therefore last over six months (200 days). If a woman gets a 100 g tube of a mere 0.15% natural (150 mg per 100 g) cream each half gram will contain 750 mcg. She can expect 150 mcg (20%) to go into her blood. Men who are "androgen resistant", and cannot use testosterone or DHEA, simply cannot use any androgen as they will just get estrogens. Even pregnenolone, nandrolone, HCG, aspartic acid, and other testosterone boosters will spill over into estrogens in such cases. Even aromatase inhibitors like formestane and ATD will eventually just turn into estrogens. There is no known cure and no research being done here.

Androstenedione levels generally parallel testosterone, since this, and androstenediol, are the direct precursors to testosterone in our bodies. You generally do not have to measure this or supplement it. If a woman has high testosterone or DHEA, it would be a good idea to test her androstenedione as well. The only way to lower hyper levels in women (again, men do not have hyper levels) is by diet, exercise, and balancing the other basic hormones. Androstenedione was classified as a prescription drug in 2004, and is now a felony to possess or sell.

DHEA is the third androgen. This is very much a life extension hormone, and is critical to your health and longevity. Studies again show diabetic men are usually deficient, while women can be too low or too high. Men rarely have excessive levels, while women sometimes have too much DHEA. As always, you are looking for the youthful level you had at age thirty. If low, women can take half tablets (12.5 mg) of DHEA orally, and men can take the regular 25 mg tablets. Never use DHEA, unless you have proven by blood or saliva analyses that you are low. This is a very powerful hormone, and excessive levels are harmful. Some men will find they cannot metabolize oral DHEA and are androgen resistant. Transdermal creams are not effective here, because of the poor absorption. Injections are not practical, nor natural. DHEA (and pregnenolone) is only about 10% absorbed orally. Do not use expensive "7-keto DHEA", as it is has no science behind it.

Melatonin is a powerful *antioxidant* hormone. Melatonin is much more powerful and beneficial than the media tells you, and has even been studied for cancer therapy. Even though levels fall from the time we're 18, it is best you test your melatonin level if you are over the age of 40. You cannot assume you are low just because you are older. Hyper levels are medically unknown (except rarely with pineal tumors). A few people are melatonin deficient throughout life, and would benefit from early diagnosis. We have discussed the vital importance of antioxidants and oxidative stress in blood sugar conditions. This is a very underestimated hormone, despite numerous published studies showing major benefits in real people (including immunity enhancement and antioxidant properties) for many diseases. Men over 40 can take 3 mg at night, and women half tablets (1.5 mg). Only take this at night when our levels naturally rise, and never during the day. Taking this during the day would produce negative effects. You can only test melatonin at 3:00 AM with a saliva test kit.

There are literally dozens of valid animal studies proving the benefit of youthful melatonin levels for diabetes and blood sugar disorders. We are now getting many human studies. At Granada University in Spain (*Journal of Pineal Research* v.35, 2003) both blood and saliva testing showed diabetics to be about 40% lower in melatonin. Here, age matched type 1 and type 2 patients of both sexes were used. Plasma melatonin averaged only 8.98 pg/ml in patients, but 14.91 in healthy controls. This is most impressive, since both type 1 and 2, and both men and women patients were used. More human studies on melatonin will be forthcoming, not only for diabetes, but many other illnesses.

Pregnenolone is the "orphan" hormone, like estriol. There is very little research, despite its great importance to our health and well being. Studies on pregnenolone and diabetes are almost non-existent. This is the "grandmother" hormone, from which all the other sex hormones are derived. Pregnenolone is *the* brain and cognition hormone. Our levels fall at about the age of thirty-five to forty and then stabilize. Despite the lack of research here, you must

balance your pregnenolone level, so all your other hormones can work effectively. Men over 40 can take 50 mg if they prove to be low, and women about 25 mg. There are no saliva kits in 2012, and doctors will overcharge you to test this. Go to websites such as www.walkinclinic.com to test this without a doctor. You are looking for the youthful level you had at age thirty, as always. This will help keep your mind, memory and cognition strong in your elderly years. This is the most important brain, memory, and cognition hormone of all. Use this with PS and ALC.

Growth hormone is the most expensive hormone of all, because it is difficult to make such a complex 191 amino acid chain molecule. Just because GH is expensive, does not mean it is any more important than other hormones, or that you will get any more dramatic effects. GH metabolism is disrupted in blood sugar conditions, and patients can have low, normal, or even high levels. You just cannot generalize here. The Chinese produce inexpensive GH for about \$120 or less a month (30 IU). This is a tightly controlled prescription drug. Any HGH product you see sold over the counter is worthless, especially homeopathic GH, and GH "secretagogues". You can legally buy this on the Internet from online pharmacies for your own personal use, but most of these have been shut down. You need to inject this subcutaneously (under your skin, or s.c.) Sublingual GH in DMSO works well, but is not legal. One milligram equals three International Units. The average adult needs 1 IU (0.33 mg) a day. It is very difficult to blood test GH levels, and GH rises dramatically about 1,000% (ten times) around midnight, after you go to sleep. You cannot saliva test for this, and IGF-1 levels do not parallel GH levels, despite the "conventional wisdom". You need to go by actual results here. Just go by real world results, rather than blood testing. Do not even think of using GH until all your other basic hormones are balanced. This is a very overrated hormone. Are you willing to spend \$1,500 a year on this?

T3 (triiodothyronine) and T4 (L-thyroxine) are your two thyroid hormones. Thyroid metabolism is generally slow in both

type 1 and 2 diabetics. Get an inexpensive blood test for these. Test your FREE T3 and FREE T4. Do not let the doctor test the traditional TSH and T3 uptake; these do not accurately indicate thyroid function. Again, you must test your free T3 and free T4, regardless of what your doctor tells you. You can use websites like www.healthcheckusa.com to get this done inexpensively. Doctors know little about thyroid diagnosis, and this includes endocrinologists. Here you cannot accept low normal values, even though they are technically "in range". You need midrange or better values. Add high and low ranges and divide by 2. T3 and T4 are both bioidentical hormones, with no side effects whatsoever when used properly. That's right- Synthroid® and Cytomel® are exactly the same as the hormones in your body. Do not use Armour® Thyroid from pigs, as it contains a 4:1 ratio of T4 and T3. Very few people (i.e. 5%) are low in both- treat T3 and T4 separately. For people with excessive levels, only diet and lifestyle will lower them; do not get surgery or irradiate your thyroid gland!

Insulin can be measured directly, but few people should measure theirs directly. The glucose tolerance test (GTT) is much more informative, as it tells the *response* of the insulin to a sugar load. The *response* of insulin is more important than the blood levels per se. The GTT test is excellent, inexpensive, and very underused. Because of the epidemic of insulin resistance, and other blood sugar conditions, a GTT should be a routine part of a yearly physical, rather than measuring insulin per se. You want to be at least 10 points below the accepted healthy level. If you have a fasting blood sugar level of 85 of less, you probably don't need a GTT. Do not accept the usual figure of 100 or less as it just isn't good enough. Fasting blood sugar is a very accurate indicator, and if yours is over 85 mg/dl get a GTT test.

Progesterone is not just a "female" hormone, although it derives from "pro-gestation". Women should read my book *Natural Health for Women* to learn more about the benefits of progesterone. Buy a product with about 1,000 mg per two ounce jar. Many women of any age can benefit here. Saliva testing does

NOT work well, since it is fat soluble. You can measure this with blood according to your monthly cycle. After menopause it doesn't matter, of course, when you measure it. Postmenopausal women can safely use this any two weeks of the month without testing, since their ovaries no longer produce this. Men can use 1/8 teaspoon five days a week directly on their scrotums to protect against excess estrogens as they age. Progesterone is therefore *anti-feminizing* in men. Men need youthful levels of progesterone just as women do. Please read my book *The Natural Prostate Cure* to learn more about why they need this.

Estradiol (E2) is the strongest, and potentially the most dangerous, of the three basic estrogens. Most American women are up to their ears in estradiol and estrone. Men over 50 generally have more estradiol and estrone than their postmenopausal wives! Only diet and lifestyle will lower hyper estradiol levels, not toxic prescription drugs. Very, very few women will need supplementary estradiol. Low normal values much preferred here. Westerners generally have excessive levels. Vegetarians and rural Asians have lower levels. All females of any age, with even mild gynecological problems, should test all three estrogen levels. Patches are expensive, oral pills are not absorbed well, transdermal creams deliver only about 20%, sublingual drops are almost unknown (but most effective), and DMSO solutions not approved by the FDA. Transdermal creams and sublingual drops can be prepared by a compounding pharmacist if you get a prescription. 50 mcg (micrograms) a day in the blood would be a good dose. Estradiol is very powerful and should only be used by women who are actually low out of range. This is rare to find.

Estrone (E1) is the second basic estrogen. The same information and advice equally applies, as with estradiol. Estrone is not as powerful as estradiol, but is still very potent. High levels cause a wide range of health problems. For the few women who are actually low, out of range, in estrone they can use transdermal creams or sublingual drops just as with estradiol. Look to deliver about 100 mcg (micrograms) a day into your blood. Very few

women are low in this.

Estriol (E3), like pregnenolone, is the other orphan hormone. This has very little research available, especially when compared with estradiol and estrone. Common sense tells you that women must maintain youthful estriol levels. Men do not need to test this. Estriol comprises about 80% of human estrogen, and is the "good" or beneficial estrogen. Doctors do not measure estriol, nor prescribe it. Normal pharmacies do not carry it! Only a compounding pharmacist can supply it legally, but it is still available on the Internet inexpensively. Get a 0.25% transdermal cream or gel (150 mg per 2 ounce jar), and use a half gram a day. Sublingual drops in oil should contain about 500 mcg per drop. Vaginal gels are effective, but are inconvenient and unnecessary. Never use oral tablets, as they are very ineffective. If a blood or saliva test shows you are low, you want to deliver about 500 mcg a day into your blood. Strive for high normal ranges here, since rural Asian women and vegetarians have higher levels.

Cortisol is the stress hormone. Researchers agree that diabetics tend to have higher levels of cortisol. High levels indicate inability to deal with stress on a daily basis. The ideal way to measure this is a 24 hour, four sample diagnosis at 9/1/5/9. If you have high cortisol you must eat better, take supplements, balance your other hormones, *exercise*, and somehow deal with the factors causing stress in your life. Deficient levels are unusual, but Cortef® can be taken at the exact time your level is low. You really don't need to bother with cortisol at all. This is completely optional. Cortisol is what it is.

Cholesterol is the very basis of all the other sex hormones. This is treated in a separate chapter with triglycerides. Balance all your basic hormones for optimal health and longevity. Doctors, including holistic, naturopathic, life extension, gynecologists, and endocrinologists, can be of little help here.

Chapter 11: Hormone Testing

Currently the medical profession is in the Dark Ages when it comes to basic hormone testing. This includes endocrinologists, who are *supposed* to specialize in the diagnosis and treatment of hormonal balance. Even the most prominent diabetes specialists simply have no idea that all the basic hormones should be balanced in order to successfully treat and cure blood sugar problems. Their only concern is insulin! Balancing your basic hormones really can be very simple, inexpensive, and straight forward, as you have already seen in the previous chapter. Fortunately, you can test most of your hormones at home with saliva test kits for less than \$30 apiece. Saliva testing has been used successfully for decades in clinical settings. It is only in the last decade it has been offered to the general public. You simply send your saliva sample to a diag-

nostic lab for RIA (radioimmunoassay) testing. Saliva always gives free, bioavailable hormone levels, and never bound, unavailable ones. You can readily find such testing services on the Internet by typing in "saliva hormone testing", "hormone testing",

and similar terms on your favorite search engine.

Test your free testosterone, not your total or bound. You can do this with a saliva kit, or with a blood draw. If you get a blood test, you must explain to the doctor you do not want your total or bound levels tested, and you're not interested in any meaningless bound-to-free ratios. Look for the youthful level you had at the age of 30, and not the level "normal" for your age. Women must do this, even though they only have one tenth the amount men do. Literally 90% of men over the age of 50 are deficient. Women can have hyper or hypo levels.

Test your DHEA or DHEA-S (sulfate) with either a saliva kit or a blood draw. Look for the youthful level you had at the age of 30. Remember that people, especially women, can suffer from hyper levels which are just as harmful as hypo levels. DHEA levels generally fall as we age, especially after the age of 40.

Your melatonin must be tested at 3:00 AM with a saliva kit. The only other way is to pay a fortune to stay overnight in a sleep lab and get a blood draw. Look for the level you had at the age of 30. Doctors have no interest in testing or prescribing melatonin, since they don't understand how important it is. Also, it is sold over the counter, so there is no profit in it for them. Our melatonin levels fall from the time we're 18 until they almost disappear by our seventies. Most everyone over 40 would benefit from melatonin supplementation. Don't assume you are low, just because you are getting older.

Pregnenolone is the forgotten or orphan hormone, and doctors don't even know what it is or care. Yes, this includes endocrinologists generally. There is almost no research done on pregnenolone amazingly enough. No saliva tests are available in 2012. Test this with a blood draw at www.walkinclinic.com without a doctor. Look for the level you had at the age of 30. Levels fall at about the age of 35-40 and then tend to stabilize. Hyper levels are rare. Again, don't assume you are low just because you are getting older. Everyone is biologically unique.

Growth hormone (GH) cannot currently be tested with saliva. It is difficult to test with a blood draw due to the fact it varies a lot during the day. This must be tested in a clinic with four blood draws, say at 9/1/5/9 in one day. It is best to go by real world results here. Just go by actual physical results you get from supplementation. If you are over 50 your GH levels are surely low, and you could benefit somewhat from taking it. You would have to inject 1 IU (0.33 mg) s.c. (subcutaneously) every day. Or use it sublingually in DMSO. Do not even consider taking GH until all your other basic hormones are balanced. This is a very expensive vanity that must be injected daily. It will cost at least \$1,500 a year for Chinese, and \$3,600 for American prescription GH. GH is a highly overrated and overpriced.

The medical profession is really walking in darkness when it comes to thyroid testing. Doctors will usually waste your time

and money testing your TSH (thyroid stimulating hormone) and T3 uptake, instead of your free T3 and free T4. In 2012 there is no saliva testing offered, but this situation should change due to demand. Getting your free T3 and free T4 tested is very inexpensive, and only costs about \$30 each, plus the office visit. Go in at about 9:00 AM fasting. Fortunately you can go to websites (like www. healthcheckusa.com) and get this done for under \$100 without a doctor. Do not settle for low normal ranges here, but look for midrange levels. Add high and low ranges and divide by 2. Ranges differ from lab to lab; there is no universal range. 100 mcg of T4 and 25 mcg of T3 (it is always a 4:1 ratio) are good starting doses if you are low. You can get bioidential T3 (Cytomel®) and T4 (Synthroid®) legally on the Internet from Mexican online pharmacies. Search for generic Levoxyl® and Cynomel®. Do not use Armour® pig thyroid, as it contains both in a 4:1 ratio, and few (like 5%) people need that.

Rather than test your insulin per se, it is better to get a glucose tolerance test (GTT). You drink a 75 gram measured cup of glucose, wait an hour and have your blood sugar level tested with a blood draw. If the accepted range is 140 mg use 120 to130 as the more healthful range. Just go 10 to 20 points under the "accepted" level. *Make sure your fasting glucose level is 85 mg/dl or less*; do not accept the accepted "normal" limit of 100 or more. It must be 85 or less. The GTT test is inexpensive, accurate, and should be routine for anyone with symptoms of the metabolic syndrome, or anyone over the age of 40. This is a very under-utilized tool.

Men don't need to test androstenedione, but women should if they have either a high DHEA and/or testosterone level. All three of these hormones are "androgens". Women who have hyper levels of any or all of these suffer from such problems as polycystic ovary syndrome (PCOS) and hirstutism (hair growth). Androstenedione levels generally parallel those of testosterone.

Pre-menopausal women can test their progesterone levels with blood according to their cycle, and use transdermal pro-

gesterone if they are low. This includes teenage girls, and women under 40. Actually, testing is optional. *Saliva testing just doesn't work well here*, since progesterone won't dissolve in water. Postmenopausal women can simply use progesterone any two weeks of the calendar month, since their ovaries are no longer active. Men over 40 should, use small amounts of transdermal progesterone (i.e. 1/8 teaspoon five days a week), but don't need to test it.

Teenage girls, pre-menopausal and post-menopausal women should all test their estradiol, estrone, and estriol levels with a saliva kit according to their cycle. Men don't need to do this, unless they are using testosterone supplements (which can aromatize into estradiol and estrone), or suspect any kind of hormonal imbalance such as prostate problems, gynecomastia, etc. Doctors, including endocrinologists, do not test for nor prescribe estriol, nor is it sold in normal pharmacies. Doctors blindly prescribe dangerous oral estradiol and estrone supplements to women without even testing their levels.

Cortisol is the stress hormone, and can be tested with saliva. You can buy a saliva kit and take four different saliva samples in a 12 hour period at 9/1/5/9. Only diet, exercise and lifestyle will help you lower cortisol. Hypocortisol (low) levels are uncommon, but you can take bioidentical cortisol (oral hydrocortisone) known as Cortef® supplements if you have this problem. You really don't need to bother with cortisol testing at all. Spend your time and effort on your other hormones. Cortisol is what it is.

Saliva hormone test kits should be sold in every pharmacy, drug store, and health food store, but surprisingly are not. You can readily find sources on the Internet under "saliva hormone test" or "saliva hormone testing" using your favorite search engine. There are also now more and more Internet sites offering real blood testing without a doctor. You will never have optimal health until your basic hormones are in balance.

Chapter 12: Heart Disease and Cholesterol

We need a separate chapter on blood fats and cardiovascular health, because these factors are so related to blood sugar conditions. One of the hallmarks of Syndrome X, and other blood sugar conditions, is high cholesterol (TC) and triglyceride levels. This is called "dyslipidemia". High triglycerides are more important than total cholesterol levels here. The cholesterol to LDL ratio is also important. Divide your total cholesterol by your HDL level, and you should get a ratio of 4.0 or less for men, and 4.5 or less for women. Low HDL and high LDL levels are characteristic of blood sugar conditions generally. The average adult American has an average cholesterol level of about 240. A healthy, good level is about 150, no matter what age, race, or sex you are. Lower cholesterol levels are easily obtainable by simply cutting down, or cutting out, meat, eggs, poultry, and eliminating all dairy products from your diet. Even those genetically predisposed to higher TC levels can easily keep them under 200 with diet and lifestyle. Keep your triglycerides well under a 100 level. CRP is a very accurate indication of CHD health, and should be under 1.0 mg. Homocysteine is another very accurate blood sugar and CHD indicator, and should be less than 10 mmol. Uric acid is a very accurate test for both blood sugar and CHD, and should be under 5 mg. Please read my book Lower Cholesterol Without Drugs to see how to keep all seven of these factors at healthy levels naturally, safely, and effectively without resorting to toxic, dangerous drugs.

To be clear about this you must be concerned with:

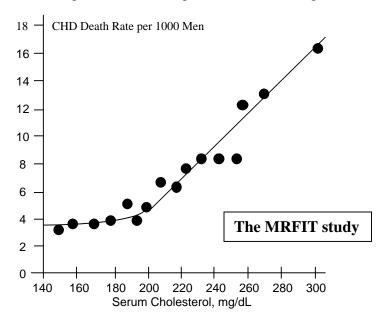
TOTAL CHOLESTEROL
TRIGLYCERIDES
HIGH DENSITY CHOLESTEROL
LOW DENSITY CHOLESTEROL
C-REACTIVE PROTEIN
URIC ACID
HOMOCYSTEINE

Researchers around the world agree that both type 1 and 2 diabetes, insulin resistance, and impaired glucose metabolism are highly correlated with dyslipidemia. There is no reason to review this overwhelming research, as the scientists of the world are in basic agreement on this issue. Our emphasis will therefore be on practical and effective ways to lower our blood fats naturally. *Diet is the most important* of course. Proven supplements, especially beta-sitosterol, flax oil, beta glucan, and soy isoflavones are the second means. Natural hormone balance is the third, and regular exercise the fourth. Fasting once a week on water from dinner to dinner will also help you lower blood fats. Read my book, *Lower Cholesterol Without Drugs*.

Supplements will only help you if you eat well. The most important supplement is 300 to 600 mg of beta-sitosterol. Betasitosterol is found in literally every vegetable you eat. The studies on lowering blood fats with mixed plant sterols go back over three decades. Most Americans only eat about 300 mg a day, and vegetarians about twice that much. We eat too many omega-6 fatty acids, and not enough omega-3s. Flax oil is the best known source of omega-3 fatty acids (and lignans), and a better choice than fish oil for many reasons. Choose flax oil! Our food is very deficient in omega-3s, and very excessive in omega-6s. Beta glucan is the third supplement. Beta glucan is the most powerful immune enhancer known to science, and that includes prescription drugs such as interferon alpha. Beta glucan has also shown effectiveness in lowering blood lipids. Please read my booklet What is Beta Glucan? to learn just how powerful and effective this really is. People of all ages will benefit from taking 200 mg of more of beta glucan a day. Isoflavones are the fourth supplement. Taking 40 mg of mixed daidzein and genistein soy isoflavones is the most practical and realistic way to get the benefits of soybeans. Western people simply won't eat enough soy foods to get sufficient isoflavones in their diet. Soy foods just aren't a part of Western culture.

Pseudo-experts who tell you that cholesterol is not an important indicator of CHD health and longevity prove their com-

plete lack of knowledge in this area. It has become faddish to say, "cholesterol doesn't count", so people have an excuse to continue their high fat diets. Some frauds go even further, and tell you that low cholesterol is somehow "dangerous". Many elderly people are so sickly that they lose their ability to manufacture cholesterol, despite a high fat diet. Therefore, their lower cholesterol levels are not indicitive of good health at all, but rather of morbidity. The chart below- from the Multiple Risk Factor Intervention Trial (MRFIT)- proves beyond any doubt that total cholesterol should ideally be about 150 mg/dl. (Archives of Internal Medicine v.148, 1998). 361,662 men from 40 different countries aged 35-57 were studied over a period of six years. The ones with low cholesterol had only 3 deaths per thousand every year, while the ones with high cholesterol had 16 deaths per thousand annually. That is 533% more deaths. They summarized this as, "The association between serum cholesterol and six year risk of CHD was continuous, graded, and strong over the entire range..."



The famous Seven Countries Study covered over 25 years. Reviewing all the known factors in coronary heart disease they concluded, "Over 50% of the variance in CHD death rates in 25

years were accounted for by the difference in mean serum cholesterol". A later follow-up stated, "Across cultures, cholesterol is linerally related to CHD mortality". The American Heart Association has consistently advised that the evidence linking elevated serum cholesterol to CHD is overwhelming. The legendary Framington Heart Study found that total cholesterol, triglycerides, HDL, and LDL levels taken together were the single most important determinant of heart disease.

Americans eat about 42% fat calories, and most all of them are from saturated animal fats. Substituting vegetable oils is simply lessening the harmful effects. Canola oil is a promotional fraud (seen any canola plants lately?), despite the hype and promotion by the so-called health food industry. Olive oil must be limited like any other vegetable oil. Corn, safflower, sunflower, and olive oils should be used in moderation. Soy oil tastes terrible, unless it is highly refined. Sesame oil is very expensive, and toasted sesame oil is a condiment. Palm and coconut oils are meant for tropical peoples living in tropical climates. You should eat less than 20% fat calories, and these should be from vegetable sources, as well as seafood. This is very easy to do when you're not eating red meat, poultry, eggs, dairy products, fried foods, and junk foods. 15% is even better.

At the University of Tor Vergata in Rome (*Acta Diabetologica* v. 40, 2003) people with metabolic syndrome were studied. The mean triglyceride level was a whopping 193. Again, *the triglyceride count is the most meaningful blood lipid figure*. The mean total cholesterol was 225. Their fasting blood sugar was 108, they were overweight, had high HDL and low LDL levels, hypertension, as well as high insulin. These people were given exercise capacity tests on a treadmill. They were all found to have diminished cardiovascular capacity, which indicates a much higher likelihood of heart and artery disease. People with metabolic syndrome die earlier, and have a poorer quality of life, especially due to CHD conditions of all kinds. Triglycerides are the most important lipid indicator of blood sugar problems, and you must

keep them under 100. Sweets of all kinds, including honey and maple syrup, will raise your triglycerides levels- even on a low fat diet. Vegans and ethical vegetarians are nearly always sugar addicts. They usually have elevated triglyceride levels, despite eating no saturated fats or animal foods at all. Fruit juice, dried fruit, stevia, honey, agave, etc. are just as bad as white sugar.

Hydrogenated oils, often called trans-fatty acids or partially hydrogenated oils, are the very worst fats. These are made by taking cheap oils (such as cottonseed) and forcing hydrogen gas into them, under extreme pressure and heat, with a platinum catalyst. Make sure you have none of these in your house, such as margarine or shortening. Margarine is not, "better than butter" at all- it is even worse. You can buy non-hydrogenated, non-dairy spreads made of coconut and palm oils as a temporary transition (or occasional use) away from butter and margarine. Read the labels on any food you buy to make sure the word "hydrogenated" is not listed. Eating in fast food restaurants is almost guaranteed to get trans-fats into your body. Eating in any restaurant is risky, since the types of oils and fats used in their foods are not mentioned on the menu. Studies around the world over the past decades have proven repeatedly just how harmful these trans-fats are, despite their popularity.

If you are over the age of 40, you should basically be taking all the supplements listed in *Chapter 6: Supplements*. The most important cornerstone supplements are beta-sitosterol, flax oil, beta glucan, and soy isoflavones. There are other supplements you can take, like 3 grams of guar gum, 3 grams of fruit pectin (apple or grapefruit), 1,200 mg of lecithin, 3 grams of glucomannon, and 3 grams of sodium alginate. Please do not fall for such promotional scams as policosanol, red rice yeast, "modified" fruit pectin, and overdoses of niacin. Regardless of your age, you should be taking a complete mineral supplement with the 20 needed minerals in the required amounts. You can find one if you simply search the Internet under "mineral supplements". Look for onewith all twenty of these vital elements in the biologically

required amounts clearly stated on the label.

Doctors rarely understand the importance of our basic hormones on blood lipids. If you are over 40, you definitely need to test and balance your testosterone, DHEA, progesterone, pregnenolone, melatonin, as well as your thyroid hormones T3 and T4. Women should also test their estradiol, estrone, and estriol. Please read *Chapter 10: Your Basic Hormones* for more information on this. Cholesterol the biological source of all our sex hormones including pregnenolone, DHEA, testosterone, progesterone, androstenedione, estradiol, estrone, and estriol. Deficient or excessive hormone levels interfere with cholesterol metabolism. Doctors have no idea that our basic hormone levels strongly affect our cholesterol and triglyceride levels, so they don't bother to test hormone levels in people with high blood fats.

In 2002 the Mississippi Regional Cancer Center published a study, "Hypercholesteremia Treatment: A New Hypothesis" (Medical Hypotheses v 59, 2002). These progressive doctors treated people with high cholesterol and triglycerides by balancing their basic endocrine levels. They used bioidentical hormones. They tested their levels and then appropriately prescribed DHEA, testosterone, T3, T4, pregnenolone, progesterone, estradiol, estrone estriol, and cortisone (cortisol). These doctors realized that our entire endocrine system must be in balance, and all our hormones work together in concert, as a team in harmony. We need more such progressive clinicians, and more such enlightening studies. This was a stunning work by first rate physicians!

Keeping your blood fats low will go a long way to keep you healthy and live a long, enjoyable life. Heart and artery disease is the major cause of mortality around the world by far. Cholesterol and triglycerides are the most accurate indicators of CHD health.

Chapter 13: Obesity

Obesity is second in importance only to diet as a factor in blood sugar problems. No one disputes the influence of being overweight. A whopping 80% of type 2 diabetics are overweight! Half of American adults are overweight or obese, and people in other countries are quickly following our path. With affluence comes obesity, and high rates of all types of disease. The richer you are, the sicker you get. We will therefore spend our time discussing how to realistically lose weight and stay slim.

The U.S. Department of Health and Human Services found that losing a mere 7% of body weight resulted in more than a 50% reduction in incidence of adult onset diabetes. For a 200 pound person this is a mere 14 pounds. Just a one fifteenth drop! Being overweight has almost every negative effect on your health imaginable. Obesity is clinically associated with high insulin, high glucose, hypertension, high cholesterol, high triglycerides, increased insulin resistance, high CRP levels, high homocysteine levels, high uric acid, high leptin, and low antioxidant levels. Add to this list high cardiovascular disease rates, early death, poor quality of life, increased oxidative stress and free radicals, high cancer rates of most types, lowered immunity, increased inflammation, and higher rates of depression, and other psychological problems. The only positive factor, ironically, is stronger bones in some people due to increased body mass index.

It is only in the last two decades we have seen obesity affect American children and adolescents, especially Latins, Africans, Asians, and Amerindians. Type 1, type 2, insulin resistance, hyperinsulinemia and hypoglycemia, hypertension, high cholesterol, and triglycerides, are all alarmingly increasing in these overweight children. *1 in 3 American children will grow up diabetic*. Type 1 diabetes used to be called "childhood onset", and type 2 called "adult onset". Now children commonly are coming down with type 2 diabetes. The distinction is blurring. One im-

portant factor here is the public (which are really government schools and not "public" institutions) school lunch programs. Children are fed high fat, high sugar, heavily refined foods with little nutrition. Dairy products and other food subsidy programs are promoted. Private and parochial schools don't do much better. Children also commonly eat meals in fast food restaurants. The food at home isn't much healthier either.

The American Diabetes Association, the North American Association for the Study of Obesity, and the American Society for Clinical Nutrition recently issued a statement (American Journal of Clinical Nutrition v 80, 2004) Weight Management Through Lifestyle Modification for the Prevention and Management of Type 2 Diabetes. "Overweight and obesity are important risk factors for type 2 diabetes. The marked increase in the prevalence of overweight and obesity is presumably responsible for the recent increase in type 2 diabetes. Lifestyle modification aimed at reducing energy intake and increasing physical activity is the principal therapy for overweight and obese patients with type 2 diabetes. The prevalence of diabetes in the U.S. continues to rise by epidemic proportions. This increase parallels the rising rates of obesity and overweight observed over the last decade. Indeed, as BMI increases, the risk of developing type 2 diabetes increases in a dose-dependent manner. The prevalence of type 2 diabetes in obese adults is 3-7 times that in normal weight adults. Those with a BMI greater than 35 are twenty times as likely to develop diabetes as those with a BMI between 18.5 and 24.9. In addition, weight gain during adulthood is directly correlated with an increased risk of type 2 diabetes. Obesity also complicates the management of type 2 diabetes by increasing insulin resistance and blood glucose concentrations. Obesity is an independent risk factor for dyslipidemia, hypertension, and CHD, and thus increases the risk of cardiovascular complications and cardiovascular mortality in patients with type 2 diabetes. Weight loss is an important goal for overweight and obese persons, particularly those with type 2 diabetes because it improves glycemic control. Moderate weight loss (5% of body weight) can improve insulin action, decrease fasting blood

glucose concentrations, and reduce the need for diabetes medications. Moreover, improvements in fasting blood glucose are directly related to the relative amount of weight loss".

Want clinical proof from Cornell University (American Journal of Clinical Nutrition v 46, 1987) that you can literally eat all your want, lose weight and never be hungry? Women were allowed to eat all the whole natural foods they wanted, as long as they had 20% or less fat calories. They could eat 24 hours a day! In only 30 days, they lost considerable weight by just eating foods lower in fat. The ones who ate the 30% fat diet lost no weight. Your fat calorie intake must be under 20%. 15% is better. Again, the average American eats about 42% fat calories, and most of these are saturated animal fats. There are many more similar published clinical studies showing the very same results.

Realistically how does one lose weight, stay slim, never be hungry, and enjoy your food? *Making better food choices* is the key here. Along with making better food choice, there are many proven natural supplements to take that keep your metabolism at peak potential. Natural hormone balance is basic here. Lastly, regular exercise is always a part of maintaining normal weight.

This is part of the chart from the "Calorie Density" chapter in *Zen Macrobiotics for Americans*. This is how many pounds of each of the following foods you would have to eat in order to get 2,500 calories. You could eat 0.9 pounds of peanuts or almost 12 pounds of grapes for example. To give you some idea of this:

vegetable oil 0.6	white sugar 1.5
butter 0.8	honey 1.8
peanuts 0.9	French fries 1.7
walnuts 0.9	potato chips 1.8
chocolate 1.0	corn chips 2.0
beef sirloin 1.2	turkey 2.1
chuck steak 1.4	ham 2.1
cheese 1.5	lamb chops 2.2

ww pasta 3.1	mangoes 8.3
chicken 3.2	blueberries 8.8
avocado 3.3	apples 9.4
eggs 3.4	potatoes 9.6
salmon 3.9	soymilk 10.1
ww bread 4.0	grapes 11.9
navy beans 4.8	carrots 13.0
shrimp 4.8	onions 14.8
brown rice 5.1	oranges 15.6
pinto beans 5.3	cantaloupe 18.2
sweet potato 5.4	cauliflower 20.2
oatmeal 6.0	spinach 21.0
bananas 6.4	green beans 21.9
corn 6.5	cabbage 22.8
squash 28.8	cucumbers 32.8
celery 32.8	lettuce 39.0

It's obvious that meat, poultry, eggs (50% fat calories), and dairy products are basically highest in fat, and therefore highest in calories. Whole grains and beans are very filling, yet low in fat and calories. Vegetables and fruits are the lowest of all.

We only need two meals a day. The less you eat the better. Americans eat twice the calories they need. Don't eat out. Take your lunch to work. A man only needs about 1,800 calories a day, and a woman about 1,200 calories. Don't eat breakfast, and you'll have more time in the morning. Or you can eat breakfast and supper, and skip lunch. You'll save time, money, and energy not eating three times a day. Soon this will feel very natural to you, and you won't want to eat three meals a day anymore. You may not be able to fast for more than 8 or 12 hours until you are well. When you are well, you should fast every week for 24 hours, on water, from dinner to dinner.

You can eat all you want, never be hungry, and stay slim and trim just by choosing healthier, low-fat foods to eat.

Chapter 14: Exercise is Essential

If you have most any form of cancer, you can lay on your dead rear end, watch TV, rarely get any exercise, and still get well in a year, if you do all the other things you're supposed to. That is not a good idea of course. This is NOT true at all with diabetes and blood sugar disorders. YOU MUST EXERCISE REGULARLY. You can do resistance or aerobic exercise, or both, but *you must exercise regularly. There is no way around this!* No matter how well you eat, how many proven supplements you take, and how well you balance your endocrine hormone system, you still need to exercise to cure diabetes and similar blood sugar conditions. The literature is overwhelmingly clear on this. Exercise burns off that blood sugar. Since researchers around the world agree on this, we won't bother to cite the journals for the studies mentioned.

Walking is probably the best and most enjoyable single exercise of all. A simple half hour brisk walk of two miles a day is all you really need. Of course, *two* brisk half hour walks, totaling four miles a day, would be *twice* as good. Resistance exercise is just as good as aerobic exercise here, and the combination of *both* resistance and aerobic would be the ideal. Doing both resistance and aerobic is the very best program you can do. Tai chi just isn't realistically going to help you here, as it is extremely hard to learn, and doesn't get your blood flowing. Gym membership is very inexpensive and a wonderful investment.

At the University of Perugia, in Italy, a fine article was published, "Make Your Diabetic Patients Walk". They found the more walking the patients did, the more they improved. Blood pressure fell, cholesterol and triglyceride levels fell, they lost weight, their waist measurement was smaller, and fasting glucose levels were lowered, with no other lifestyle changes. Just brisk walking two or more miles a day gave dramatic results.

At the renowned Harvard Medical School two heavily re-

ferenced reviews were done on exercise and type 2 diabetes. Regular physical exercise proved to be vital for both the prevention and treatment of type 2 diabetes. Regular physical exercise with dietary restrictions increased energy expenditure. This leads to decreased body weight, increased insulin sensitivity, improved long-term glycemic control and lipid profiles, lower blood pressure, and increased cardiovascular fitness.

Two very good studies were done at the University of Barcelona, in Spain. *Both* type 1 and 2 diabetics exercised regularly for three months. Their physical fitness and aerobic capacity improved of course. Their insulin requirements were reduced, their waist measurement shrank, their blood pressure fell, Lp(a) (lipoprotein) levels fell, and their blood lipid profile improved. All this occurred with no change in diet or supplements, just regular exercise. *You must exercise to normalize blood sugar and insulin*.

Diabetes is epidemic in Finland, as in all European countries. At the National Public Health Institute it was shown that both resistance and aerobic exercise are effective in normalizing blood sugar metabolism in two separate studies. The role of physical activity in the prevention of NIDDM is of utmost importance. Both circuit-type resistance training and aerobic endurance exercise had beneficial effects in subjects with impaired glucose tolerance. The University of Kuopio and Helsinki University found the same effects with type 1 diabetics.

It is difficult to treat obese diabetics for many reasons. Overweight women at the University of Texas performed regular exercise. This exercise training resulted in significant weight loss, and lowered the insulin response to an oral glucose load (i.e. improved insulin sensitivity). Remember this was done with no change in diet. Exercise alone results in meaningful weight loss. If the women had been given a low-fat, whole grain based diet, and a full spectrum of supplements and minerals, they would have further improved insulin response, and lost even more weight.

Postmenopausal women, especially obese ones, in America can be difficult to treat because they usually have multiple health conditions. At the University of Maryland, in Baltimore, obese post-menopausal women (aged 50 to 65) performed resistance training (RT) exercise regularly for a few months. The gained strength, lost weight, lowered their body fat per cent, and improved their insulin sensitivity. The conclusion was that RT has the potential to ameliorate, and even prevent, the development of insulin resistance, and reduce the risk for glucose intolerance and NIDDM in post-menopausal women. Just simple exercise accomplished this, with no changes in diet or lifestyle.

At Kansai-Denryoku Hospital in Japan, two separate studies of type 2 diabetics were done. In the first study only exercise was used. Their insulin sensitivity immediately improved, and their glucose and triglyceride levels both fell strongly. The researchers felt the lower trigylceride levels were the most important factor for the improvement of diabetes with exercise. In the second study exercise was combined with a low-fat traditional Japanese-style diet. They concluded that short-term (7 days) low-intensity physical exercise, combined with traditional diet, reduced serum triglycerides, insulin resistance, and fasting glucose levels. Only one week!

At Syracuse University, two separate studies using resistance, rather than aerobic, exercise were done. In the first study resistance exercise reduced glucose levels in type 2 female diabetics. They found resistance exercise offered an alternative to aerobic exercise for improving glucose control in diabetic patients. To realize optimal glucose control benefits, you must follow a regular schedule that includes daily exercise. In the second study, male and female diabetics got the same results from exercising, with no other treatments or lifestyle changes.

Researchers at the University of Western Australia did four studies. They used resistance (strength training) exercise just 30

minutes a day, three times a week- 90 minutes a week- and found this provided a practical addition to lifestyle management of type 2 diabetes in only eight weeks. Resistance exercise (circuit training) was found to be an effective method that improved functional capacity, lean body mass, strength, and glycemic control of patients. One of the studies found that moderate exercise and a diet (including fish) high in omega-3 fatty acids improved various diagnostic factors for type 2 diabetes. Another study lowered glucose 13%, and insulin 20%, just with mild exercise. At St. Vincent's Hosptial, in Sydney, type 1 diabetics improved their health with just 45 minutes of cycling a day. Again, feeding whole complex carbohydrates prior to exercise prevented hypoglycemia.

At the famous Brigham & Women's Hospital in Boston, a massive 26 page review was done, with 168 references, on exercise in both type 1 and 2 diabetes. There is no doubt that regular exercise has numerous benefits for blood sugar conditions. Physical exercise is an important adjunct in the treatment of both NIDDM and IDDM. There is now extensive epidemiological evidence demonstrating that long-term physical exercise can significantly reduce the risk of developing NIDDM. Glucose uptake, glucose control, insulin sensitivity, GLUT4 (a marker for glucose uptake) is raised, and glucose transport are all improved. This is the most extensive published review ever done and is simply inarguable regarding how essential exercise is.

When you have blood sugar dysmetabolism of any kind you must get regular exercise. Ideally you will do both resistance and aerobic, but it just doesn't matter as long you do one or the other. You'll live longer and live better this way.

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The Natural Diabetes Cure, is the most researched, complete, and comprehensive book on this subject.

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- scientifically proven supplements
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